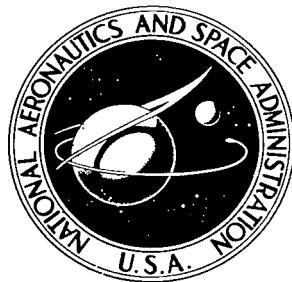


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AERODYNAMIC LOADS ON DEPLOYED CANARD SURFACES AND ROCKET NOSE SECTION OF THE APOLLO LAUNCH ESCAPE VEHICLE

by William C. Moseley, Jr., and Branch S. Phillips

Manned Spacecraft Center
Houston, Texas

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION • WASHINGTON, D. C. • JUNE 1969



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ABSTRACT

Wind-tunnel tests were conducted using a 0.150-scale model of the forward section of the Apollo launch escape rocket to obtain the data presented. Pressure data were obtained for the body section of the model. Aerodynamic and pressure data were obtained on the canard surfaces of the model. Three removable canards were used; two were instrumented for pressure data and one was instrumented for force and moment data. Tests were conducted at Mach numbers of 0.68, 1.06, 1.50, and 2.00 and at canard deployment angles of 30°, 60°, 90°, and 115°, with full deployment at the 115° angle. Results of these tests are presented in tabular and graphic forms.

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AERODYNAMIC LOADS ON DEPLOYED CANARD SURFACES
AND ROCKET NOSE SECTION OF THE APOLLO
LAUNCH ESCAPE VEHICLE

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SUMMARY

To obtain aerodynamic characteristics and pressure data necessary for vehicle design, a series of wind-tunnel tests for the forward portion of the Apollo launch escape rocket was conducted by using a 0.150-scale model of that section of the vehicle. The test model included deployable canard surfaces that are necessary to provide the destabilization increment in pitching moment that is required to rotate the Apollo launch escape vehicle to the desired blunt-face-forward flight attitude after an abort. Aerodynamic characteristics and pressure data obtained during this series of wind-tunnel tests included total loading (determined by strain-gage balance measurements) and steady-state pressure distribution over the canard surfaces and over the surface of the escape rocket nose section. Three removable canard surfaces were used; one was mounted on a strain-gage balance and two were instrumented for pressure-measurement data. These test data were obtained for the four canard deployment angles of 30°, 60°, 90°, and 115°, and for the four Mach numbers of 0.68, 1.06, 1.50, and 2.00. The angle-of-attack range was approximately from -120° to +120°. The tests were conducted in the North American Aviation, Inc., trisonic wind tunnel.

INTRODUCTION

Responsibility was given to NASA to develop a manned vehicle that could travel to and land on the surface of the moon. In support of the development and design of such a vehicle, the Apollo wind-tunnel test program was established. A history of the development program and of the events that led to the establishment of the basic Apollo configurations can be found in reference 1. This extensive wind-tunnel program was conducted to acquire design data and aerodynamic characteristics of the flight vehicle. Aerodynamic static and dynamic stability characteristics as well as pressure and load data were necessary to plan the Apollo flight program. These data included aerodynamic characteristics of the entire launch escape vehicle and of its several modular parts. The stability characteristics of the Apollo command module (CM) are presented

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in reference 2. Aerodynamic characteristics of the Apollo launch escape vehicle (LEV) as determined by wind-tunnel tests are discussed in reference 3.

Of the modular parts of the LEV, the deployable canard surfaces are of primary importance. The launch escape system will quickly transport the CM away from a malfunctioning booster. However, while the necessary escape distance is being obtained, the LEV will be in a rocket-forward position. For proper deployment of the earth-landing system, the flight attitude of the CM must be heat-shield-forward or blunt-face-forward. The canard surfaces are designed to provide the necessary destabilization increment in pitching moment required to rotate the CM to the desired blunt-face-forward flight attitude. More detailed data for the basic function and aerodynamic stability characteristics of the Apollo LEV with canard surfaces deployed can be found in reference 4.

The purpose of this paper is to present detailed data obtained during wind-tunnel tests conducted to determine loading and steady-state pressure distribution over the canard surfaces and the surface of the escape rocket nose section. The loading and pressure distributions are presented as functions of Mach numbers, angles of attack, and angles of canard deployment.

Test data were obtained for a single canard at canard deployment angles of 30° , 60° , 90° , and 115° . The last angle, 115° , represents full canard deployment. The tests were made at Mach numbers of 0.68, 1.00, 1.50, and 2.00 and over an angle-of-attack range from -120° to $+120^\circ$. Reynolds numbers for the tests varied from 15.8×10^6 to 17.5×10^6 , based on the maximum command module diameter. The tests were conducted in the North American Aviation, Inc., trisonic wind tunnel.

SYMBOLS

C_A	axial-force coefficient for the system of body axes with origin at balance center, $\frac{\text{axial force}}{q_\infty S}$
C_L	center line
C_ℓ	rolling-moment coefficient for the system of body axes with origin at balance center, $\frac{\text{rolling moment}}{q_\infty Sd}$
C_m	pitching-moment coefficient for the system of body axes with origin at balance center, $\frac{\text{pitching moment}}{q_\infty Sd}$
C_N	normal-force coefficient for the system of body axes with origin at balance center, $\frac{\text{normal force}}{q_\infty S}$

C_n	yawing-moment coefficient for the system of body axes with origin at balance center, $\frac{\text{yawing moment}}{q_\infty Sd}$
C_p	pressure coefficient, $\frac{P - P_0}{q_\infty}$
C_Y	side-force coefficient for the system of body axes with origin at balance center, $\frac{\text{lateral force}}{q_\infty S}$
C'_A	axial-force coefficient for the system of canard axes with canard surface center-line origin at $X/L = 363.7$ in., $\frac{\text{axial force}}{q_\infty S}$
C'_ℓ	rolling-moment coefficient for the system of canard axes with canard surface center-line origin at $X/L = 363.7$ in., $\frac{\text{rolling moment}}{q_\infty Sd}$
C'_m	pitching-moment coefficient for the system of canard axes with canard surface center-line origin at $X/L = 363.7$ in., $\frac{\text{pitching moment}}{q_\infty Sd}$
C'_N	normal-force coefficient for the system of canard axes with canard surface center-line origin at $X/L = 363.7$ in., $\frac{\text{normal force}}{q_\infty S}$
C'_n	yawing-moment coefficient for the system of canard axes with canard surface center-line origin at $X/L = 363.7$ in., $\frac{\text{yawing moment}}{q_\infty Sd}$
C'_Y	side-force coefficient for the system of canard axes with canard surface center-line origin at $X/L = 363.7$ in., $\frac{\text{lateral force}}{q_\infty S}$
d	maximum body diameter, 154 in. (full scale)
d'	rocket body diameter, 26 in. (full scale)
M	free-stream Mach number
P	pressure at a given instrumentation point
P_0	free-stream static pressure

q_∞	free-stream dynamic pressure
S	maximum cross-sectional area of the command module perpendicular to X-axis of the body, 18 626. 5 sq in.
S_c	single-canard maximum planform area, 791.57 sq in.
S/S_c	ratio of maximum cross-sectional area of the command module perpendicular to X-axis of the body compared to the single-canard maximum planform area, 23.531
X, Y, Z	body reference axes
X', Y', Z'	canard reference axes
X/D'	orifice location as function of rocket body diameter and distance from rocket nose
X/L	linear measurement from tower base, in.
α	angle of attack, referenced to rocket motor center line, deg
β	angle of sideslip, deg
δ	canard deployment angle, deg
ϕ	pressure instrumentation angle, measured clockwise from top of model looking upstream, deg

MODEL, TESTS, AND DATA ACCURACY

Model

A 0.150-scale model of the forward section of the launch escape rocket motor was used for this series of tests. This model represented that portion of the launch escape rocket motor which is forward of the full-scale station $X/L = 205.9$ inches (figs. 1 and 2). The model was designed to yield total load characteristics as well as load distribution. One rocket body and three movable and detachable canard surfaces, one left and two right, were constructed for this model. Left and right designations are from a forward-looking position. Of the three canard surfaces, the left canard was used to obtain force and moment data, and the two right canards were used to obtain pressure data. The two right canards, one with inner surface instrumentation and the other with outer surface instrumentation, contained 14 and 15 usable pressure taps, respectively (figs. 3 and 4). The left canard (for force and moment data) was attached to an internal balance, while the two right canards (for pressure data) were mounted rigidly to the model body. The left canard was totally isolated from the model body, which allowed force data for the left canard only to be transmitted directly into the balance. The two right canards were designed to be used alternately for positive and negative angle-of-attack ranges. The maximum planform area S_c of a single canard was 791.57 sq in.

For conversion to a more familiar aerodynamic-coefficient reduction area, the ratio S/S_c can be used, where S represents the maximum cross-sectional area of the command module perpendicular to the X-axis of the body (18 626.5 sq in.).

The nose section of the model rocket body contained 22 instrumented orifices or pressure taps that were located at selected longitudinal and radial positions (fig. 5).

Tests

The test program was designed to yield static aerodynamic stability characteristics and pressure distribution characteristics of the canards. Data for a single canard were obtained from tests conducted at Mach numbers of 0.7, 1.1, 1.5, and 2.0. The angle-of-attack range extended from -120° to $+120^\circ$. The canard deployment angles used in the tests were 30° , 60° , 90° , and 115° . Canards deployed at 115° were considered fully extended. Front views of the left half of the loads test model are shown in figure 6 with canards at the various deployment angles.

To obtain the angle-of-attack range of -120° to $+120^\circ$, three bent-sting adapters were used to mount the test model (fig. 7). In addition to the three bent-sting adapters, it was necessary to roll the model 180° to test negative angles of attack. Typical model installations in the wind tunnel are shown in figures 8, 9, and 10; and loads test models with various canard deployment angles are shown mounted on bent stings.

Data Accuracy

The balance and recording instruments were set to provide maximum sensitivity. The probable aerodynamic-coefficient errors shown in the following table are for the canard-axes system; the body-axes coefficient data should be within these limits.

Coefficients	0.68	Mach number		
		1.06	1.50	2.00
$\pm \Delta C'_N$	0.00045	0.00038	0.00033	0.00033
$\pm \Delta C'_A$	.00028	.00024	.00021	.00021
$\pm \Delta C'_Y$	.00042	.00035	.00031	.00030
$\pm \Delta C'_m$	.00036	.00030	.00027	.00027
$\pm \Delta C'_n$	.00033	.00027	.00024	.00024
$\pm \Delta C'_\ell$	.00071	.00059	.00052	.00052
$\pm \Delta C'_P$	.01110	.00920	.00810	.00820

RESULTS AND DISCUSSION

Presentation of Results

The data obtained in this series of wind-tunnel tests consist of certain finite measurements of selected aerodynamic forces, moments, and pressures. These selected data are presented in graphic form. For pressure or load distribution testing, presentation of data is accomplished principally by tables. Selected aerodynamic characteristics of the loads test model obtained for Mach numbers of 0.7, 1.1, 1.5, and 2.0 and at canard deployment angles of 30°, 60°, 90°, and 115° are shown in figures 11 and 12. Data presented in figure 11 were measured about the body-axes system, while data presented in figure 12 were measured about the canard-axes system. The canard- and body-axes systems are not parallel and will differ for each deployment angle. Therefore, force data for the two systems are different. Selected aerodynamic characteristics of the loads test model obtained for Mach numbers of 0.7, 1.1, 1.5, and 2.0 and at only the full canard deployment angle of 115° are presented in figures 13 and 14. Data presented in figure 13 were measured about the body-axes system, while data presented in figure 14 were measured about the canard-axes system.

Selected aerodynamic characteristics of the loads test model are presented in figures 15 and 16 as measured about the body axes for canard deployment angles of 30°, 60°, 90°, and 115°. A Mach number of 0.70 was used in figure 15, while in figure 16 a Mach number of 2.0 was used. Selected aerodynamic characteristics of the loads test model are presented in figures 17 and 18 as measured about the canard axes for canard deployment angles of 30°, 60°, 90°, and 115°. The data presented in figure 17 were obtained for a Mach number of 0.70, while the data presented in figure 18 were obtained for a Mach number of 2.0.

Canard pressure data for selected angles of attack and for the full deployment angle of 115° are presented in figures 19, 20, and 21. Data presented in figure 19 were obtained for a Mach number of 0.70; data in figure 20, for a Mach number of 1.1; and data in figure 21, for a Mach number of 2.0. Pressure data are presented in figure 22 from the rocket nose section model for selected angles of attack, for the full canard deployment angle of 115°, and for selected Mach numbers. Pressure distribution data obtained for a single canard from the loads test model for Mach numbers of 0.7, 1.1, 1.5, and 2.0, for canard deployment angles of 30°, 60°, 90°, and 115°, and for selected angles of attack from approximately -120° to +120° are presented in tables I to XVI.

Discussion

The loads test model was designed to provide aerodynamic loads data necessary for the detailed design of the canard system, which includes both the canard surfaces and a deployment system. The maximum canard deployment angle is 115°, with the closed position designated as 0°. Designed to be pyrotechnically activated, the canard deployment system has a maximum allowable deployment time of 0.25 second. The system necessarily has a shock attenuation system and a positive locking mechanism. The positive locking mechanism was designed to hold the canard surfaces in an open

position even when they are not fully deployed. The subsequent design problem was one of definition of the aerodynamic loads during deployment of the canard surfaces and of assurance that the design was adequate with either an assistant or a resistant aerodynamic load.

Load characteristics. - The aerodynamic characteristics of the Apollo launch escape vehicle with postabort canard surfaces deployed are presented in reference 4. The aerodynamic characteristics presented in this paper (figs. 11 to 18) were determined for a single canard. Deployment angles of 30° , 60° , 90° , and 115° (full deployment) were investigated. For convenience of the designer, data are presented about both a body (rocket) system of axes and a canard system of axes (fig. 1). The canard-axes system has its origin at $X/L = 363.7$ inches on the midpoint of the canard surface. To remain in the plane of the canard surface at all times, the axes system rotates with the canard surface. These data were determined at a subsonic Mach number, at a near sonic Mach number, and at two supersonic Mach numbers. The gross loadings under symmetrical loading conditions were considered adequate to define the maximum design loads. The data indicate some scatter, primarily at extremes of the angle-of-attack ranges for each model-sting installation; but variations of the aerodynamic coefficient with the angle of attack generally are well defined.

Pressure-coefficient data. - The static pressure data are presented in tabulated coefficient form in tables I to XVI. Two right-hand canards were instrumented with 14 and 15 usable pressure orifices. One of these canards had pressure taps on the outer surface, while the other had pressure taps on the inner surface. These two canards were interchanged according to the angle-of-attack range under investigation. Canard-pressure coefficient data for full deployment (115°) are presented for selected angles of attack and Mach numbers in figures 19 to 21. Selected plots of nose-section pressure data are presented in figure 22.

CONCLUDING REMARKS

A series of wind-tunnel tests was conducted by using a 0.150-scale model of the forward section of the launch escape rocket to obtain aerodynamic characteristics and pressure data. The test model included deployable canard surfaces which were necessary to provide the destabilization increment in pitching moment needed to rotate the escape vehicle to the desired blunt-face-forward flight attitude after an abort. By using three removable canard surfaces (two instrumented for pressure data and one for force and moment data), tests were conducted for Mach numbers of 0.68, 1.06, 1.50, and 2.00 and for canard deployment angles of 30° , 60° , 90° , and 115° (115° equals full deployment). The angle-of-attack range was approximately from -120° to $+120^\circ$.

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TABLE I. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 0.70$ AND WITH THE CANARD DEPLOYMENT ANGLE = 30°

Orifice number	Pressure coefficient, C_p									
	$\alpha = -99.5^\circ$	$\alpha = -78.5^\circ$	$\alpha = -19.6^\circ$	$\alpha = -1.07^\circ$	$\alpha = 1.52^\circ$	$\alpha = 19.5^\circ$	$\alpha = 20.1^\circ$	$\alpha = 39.0^\circ$	$\alpha = 78.3^\circ$	$\alpha = 99.4^\circ$
1	-0.6487	-1.0581	0.8833	1.1353	1.1332	0.9045	0.8815	0.0932	-0.8585	-0.6455
2	.6188	.9508	.5920	.2824	.2073	.0267	.0494	.2197	.6571	.8485
3	0	0	0	0	0	0	0	0	0	0
4	.8581	1.1065	-.7286	-.9768	-.7216	-.3547	-.3255	-.2547	-.5476	-.5135
5	1.0418	1.1084	.0665	-.1389	-.1421	-.0465	-.0560	-.0394	-.5322	-.5200
6	1.0659	1.1038	.0796	-.0497	-.0596	.0133	.0062	-.0409	-.5518	-.5009
7	1.0740	1.0764	.0986	-.0310	-.0297	.0755	.0736	-.1286	-.4902	-.5090
8	-1.0052	-1.2395	-.2153	.0112	.0146	-.1394	-.1435	-.2913	-1.4379	-1.3550
9	.5878	-.7073	.3469	-.0818	-.0439	.2955	.2939	.3501	.5222	.2284
10	-.6157	-.8706	-.4769	-.1660	-.1603	.0293	.0396	.4404	.9000	.4931
11	-.5016	-.6308	-.3139	.0062	-.0683	.1478	.1425	.4947	1.0694	1.0287
12	-.4118	-.5352	-.3427	-.2172	-.2125	-.1072	-.0843	.4488	.8775	.8962
13	-.7231	-.4961	-.2370	.0297	.0328	-.2259	-.2523	-.7829	-.9479	-.9795
14	-.9847	-1.1211	-.4484	-.0387	.0279	.3252	.3435	.5041	.3241	-.8302
15	-.5230	-.8131	-.1298	.1492	.1689	.2833	.3007	.3530	.5349	.3611
16	0	0	0	0	0	0	0	0	0	0
17	-.4707	-.5555	-.4239	-.3239	-.3003	-.0017	.0046	.3895	.8402	.8208
18	-.4521	-.6292	-.2153	-.0674	-.0971	.2071	.2179	.4573	.5533	.4918
19	-.5642	-.8356	-.3184	-.0583	.0020	.3837	.3968	.8415	1.0308	-.0648
20	-.4300	-.4829	-.0296	.1659	.2256	.5208	.5408	.9116	1.0562	.6997
21	-.4595	-.5616	-1.0191	-1.0816	-1.0781	-.4921	-.4594	.3510	1.1254	.8254
22	-.4273	-.5517	-.2680	-.1474	-.1267	.0933	.1033	.5063	1.1079	1.0468
23	-.4200	-.5776	.1064	.2865	.3658	.5845	.5751	.8045	1.1137	.9476
24	-.5286	-.4878	-.1998	-.0591	-.0675	-.1399	-.1467	-.3023	-.0256	-.0402
25-40	-1.5232	-1.2054	.0067	.2586	.0527	.2613	.2377	-.0208	.3295	.1779
26-41	-1.1548	-.9896	-.0755	.0263	.0860	.3104	.2879	-.2143	.4826	.4301
27-42	-.8599	-.9108	-.1552	-.0173	.1937	-.3067	-.2903	-.2849	.0440	.4541
28-43	-.2219	-.3029	-.1461	-.0383	.1550	-.2976	-.5392	-.9592	-.9037	-1.2344
29-44	-.7713	-.7794	-.0920	.1825	-.0275	.3062	.2773	.3906	.7905	.5648
30-45	-2.0426	-1.7746	-1.0718	-.1511	-.8961	-.1498	-.1702	-.1019	.0568	-.2436
31-46	-1.2638	-1.2710	-1.5243	.2737	-1.4778	.4376	.3863	.6668	.8926	.6718
32-47	-.5699	-.7174	-.15839	0	-.15754	0	0	0	0	0
33-48	-.6290	-.6941	-1.4357	.3804	-.13848	.1556	.1774	.3452	.9521	.7402
34-49	-.6645	-.6962	-.8254	.1458	-.6192	.2712	.2579	.4426	.8114	.7248
35-50	-.6702	-.7172	-.2400	-.4380	-.2111	-.1248	-.1172	.3290	1.0473	1.0052
36-51	-.4316	-.4800	-.4016	-.1099	-.2896	-.6127	-.6235	-1.3656	-1.3290	-.9952
37-52	-1.2703	-1.3520	-.2452	-.0046	-.0943	-.1695	.0566	.3931	1.0225	.9311
38-53	-.6385	-.7206	-.2195	-.2197	-.1608	.0690	.0623	.4155	.9896	1.0480
39-54	-.4856	-.6197	-.2040	-.2181	-.1343	.0123	.0409	.3289	.7555	.7820

TABLE II. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.10$ AND WITH THE CANARD DEPLOYMENT ANGLE = 30°

Orifice number	Pressure coefficient, C_p													
	$\alpha = -99.6^\circ$	$\alpha = -78.5^\circ$	$\alpha = -59.2^\circ$	$\alpha = -38.4^\circ$	$\alpha = -19.4^\circ$	$\alpha = -1.19^\circ$	$\alpha = 1.55^\circ$	$\alpha = 19.4^\circ$	$\alpha = 38.9^\circ$	$\alpha = 59.6^\circ$	$\alpha = 78.9^\circ$	$\alpha = 99.8^\circ$	$\alpha = 118.9^\circ$	
1	-0.6999	-0.7783	-0.3174	0.6362	1.1767	1.3300	1.1894	0.6037	-0.2324	-0.5456	-0.6905	-0.6057		
2	.7981	1.1753	1.3066	1.1038	.8140	.4939	.4532	.3092	.0111	.3410	.6664	.7711	.6443	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	1.0311	1.2952	1.0619	.0741	-.4826	-.6513	-.7083	-.7798	-.7554	-.8812	-.6642	-.8586	-.5065	
5	1.2185	1.2828	1.0650	.5169	.1248	-.2380	-.2744	-.2882	-.4583	-.7273	-.6570	-.6417	-.5156	
6	1.2248	1.2601	1.0367	.4937	.0912	-.1804	-.2002	-.1411	-.4184	-.6347	-.6584	-.6262	-.5163	
7	1.2457	1.2595	1.0092	.4677	.1098	-.1493	-.1363	-.0108	-.4267	-.5869	-.6455	-.6384	-.5105	
8	-.7725	-.7825	-.6605	-.0652	.3273	.3641	.3748	.1981	.2133	.0062	.6097	.8053	-1.0127	
9	-.5840	-.5274	-.7836	-.5763	-.2189	.2398	.1831	.5473	.6982	.8128	.8925	.5744	.2898	
10	-.6054	-.6507	-.7372	-.7448	-.4872	-.1873	-.0848	.2316	.7244	1.0076	1.1578	.7555	.2899	
11	-.5889	-.6411	-.7499	-.6590	-.3163	.0181	-.0543	.3034	.7597	1.0534	1.2812	1.2219	1.1544	
12	-.5110	-.5338	-.6122	-.7324	-.4350	-.3767	-.3691	-.1491	.7099	1.0299	1.1278	1.1160	1.1216	
13	-.8706	-.8750	-.8287	-.7779	-.4535	-.0956	-.0313	.5398	-.7763	.7864	-.7475	-.7887	-.6963	
14	-.8221	-.7463	-.9830	-.6031	-.3111	.2008	.2938	.5968	.8374	.8721	.7058	-.2268	-.9716	
15	-.6206	-.6772	-.7268	-.6342	-.0260	.3963	.4216	.5355	.6891	.8064	.8878	.6824	.3322	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	-.5280	-.5687	-.6894	-.6123	-.4841	-.3705	-.3474	.1323	.6695	.9650	1.0997	1.0494	.9680	
18	-.4973	-.6638	-.6778	.3250	-.2990	-.0882	-.0034	.2983	.7710	.9240	.9007	.7846	.8710	
19	-.6697	-.6741	-.4798	-.2687	.0237	.2168	.2627	.6180	1.0807	1.2857	1.2370	.1689	-.8372	
20	-.4893	-.5837	-.5839	-.0985	.2101	.4456	.4712	.7544	1.1213	1.2876	1.2542	.8943	.4525	
21	-.5900	-.5138	-.8387	-.7601	-.6182	-.5395	-.5187	-.4058	.5364	1.1267	1.3152	1.0011	.4911	
22	-.5280	-.6307	-.6181	-.4249	-.3324	-.4233	-.3942	.2204	.7362	1.0925	1.3062	1.2204	.9900	
23	-.5150	-.6081	-.4882	.0610	.0694	.2376	.3214	.7535	1.0280	1.1867	1.3206	1.0833	.6867	
24	-.7074	-.5648	-.6538	-.5271	-.3011	-.2107	-.2161	-.2504	-.0626	.2550	.4739	.4073	.3026	
25-40	-.5870	-.3894	-.0701	-.0091	.1389	.4779	.1711	.4704	.3412	.6085	.7201	.5268	.3830	
26-41	-.6913	-.9456	-.6315	-.3444	.0621	.1958	.3072	.5595	.2608	.5206	.9102	.7634	.5652	
27-42	-.6748	-.7442	-.9785	-.6062	-.2048	-.1636	-.3884	.4594	.2448	.2488	.5836	.7984	.6117	
28-43	-.0355	.0341	.1095	.0661	.0297	.2717	.3706	.0594	-.2385	-.4519	-.6027	-.7948	-.7801	
29-44	-.7539	-.8552	-.8160	-.4579	.1309	.3108	.2254	.5978	.7233	.9693	1.0956	.8295	.4146	
30-45	-.9490	-.9444	-.7887	-.6570	-.4234	.1275	-.5389	.3540	.5011	.6114	.6137	.3235	.1115	
31-46	-.4850	-.3683	.2319	-.7128	-.5164	.4308	-.5533	.7267	.9411	1.0415	1.1678	.9279	.6336	
32-47	-.5581	-.7856	-.9808	-.8784	-.5595	0	-.5760	0	0	0	0	0	0	
33-48	-.6051	-.7310	-.8669	-.7830	-.5278	.6175	-.4843	.4066	.6691	.9692	1.1784	.9619	.5961	
34-49	-.6247	-.7489	-.9054	-.6422	-.4453	.4513	-.2654	.5416	.7632	.9117	1.0902	.9587	.6369	
35-50	-.5306	-.6831	-.9570	-.7608	-.4214	-.4951	-.3076	.0163	.6302	1.0510	1.2481	1.1716	1.1569	
36-51	-.5113	-.5498	-.6350	-.5991	-.4768	-.2444	-.3445	-.4633	-.5302	-.4898	-.4101	-.4329	-.4104	
37-52	-.4659	-.5865	-.5988	-.5867	-.2304	-.3294	-.1615	.1259	.6960	1.0330	1.2696	1.1203	1.0080	
38-53	-.5116	-.7641	-.7730	-.8821	-.1497	-.2576	-.3334	.1947	.7475	1.0116	1.2090	1.1908	1.1312	
39-54	-.5314	-.7251	-.7187	-.8103	-.2315	-.2648	-.2609	.2099	.6459	.8726	1.0559	1.0250	.9373	

TABLE III. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.50$ AND WITH THE CANARD DEPLOYMENT ANGLE = 30°

Orifice number	Pressure coefficient, C_p																
	$\alpha = -118.9^\circ$	$\alpha = -92.8^\circ$	$\alpha = -78.4^\circ$	$\alpha = -53.1^\circ$	$\alpha = -38.5^\circ$	$\alpha = -28.0^\circ$	$\alpha = -12.8^\circ$	$\alpha = -1.64^\circ$	$\alpha = 1.62^\circ$	$\alpha = 13.9^\circ$	$\alpha = 29.9^\circ$	$\alpha = 38.9^\circ$	$\alpha = 78.4^\circ$	$\alpha = 93.8^\circ$	$\alpha = 109.8^\circ$	$\alpha = 118.9^\circ$	
1	-0.4154	-0.4468	-0.4016	0.3784	0.9870	1.2124	1.4747	1.4936	1.5014	1.4599	1.1720	0.9164	-0.1962	-0.3136	-0.4377	-0.4601	
2	.4787	1.1810	1.4267	1.4513	1.2103	1.0695	.7401	.5674	.5111	.4088	.3138	.2697	-.2839	-.4489	-.4868	-.5421	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	.7439	1.3728	1.5063	.8592	-.0017	-.0497	-.1402	-.2698	-.3204	-.3723	-.3188	-.4176	-.3177	-.4071	-.3977	-.3614	
5	.6746	.6523	.6522	.7770	.6351	.3950	.0293	-.0818	-.1011	-.1460	-.1765	-.2870	-.3510	-.4344	-.4312	-.4186	
6	1.1125	1.4879	1.4851	.9938	.5753	.3842	.0592	-.0737	-.0922	-.1111	-.2026	-.3560	-.3646	-.4265	-.4673	-.4218	
7	1.1278	1.5000	1.4723	.9758	.5657	.3543	.0470	-.0635	-.0766	-.0505	-.1859	-.3508	-.3421	-.4220	-.4106	-.3809	
8	-.3415	-.3176	-.2863	-.1157	.1751	.4257	.7329	.6913	.6501	.4705	.3254	.4026	.1756	.2280	.4147	.4329	
9	-.4047	-.4840	-.3831	-.2104	-.2364	-.1195	.0724	.3189	.3267	.5431	.7336	.8500	1.1647	.9828	.7059	.5404	
10	-.3955	-.4495	-.3312	-.2944	-.3465	-.3961	.0525	.2316	.0799	.1324	.6123	.8655	1.3708	1.1447	.7379	.5859	
11	-.4164	-.4655	-.3270	-.4561	-.3796	-.3654	-.1174	-.2214	-.1741	.2521	.6136	.8618	1.4888	1.4657	1.4197	1.4058	
12	-.4349	-.4178	-.2721	-.4272	-.4207	-.3899	-.2716	-.1851	-.2025	-.0660	.5040	.8253	1.2851	1.3226	1.3078	1.3971	
13	-.3657	-.3305	-.3141	-.3772	-.4309	-.4047	-.2276	-.0499	-.0078	-.2034	-.4054	-.4113	-.2744	-.2262	-.2896	-.3375	
14	-.4791	-.4800	-.4803	-.5083	-.4038	-.2982	.1241	.3507	.4240	.6721	.8295	.9580	.9972	.3134	-.1929	-.3745	
15	-.3142	1.0556	-.1952	-.2181	-.3063	-.2770	.1001	.3526	.4562	.6369	.7728	.8826	1.1489	1.0505	.7606	.5403	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	-.3851	-.4233	-.3072	-.4478	-.3780	-.3548	-.2684	-.1822	-.1204	.0986	.5294	.7991	1.3142	1.3307	1.2658	1.2152	
18	1.2595	1.2550	1.1577	-.4474	1.1486	.2141	.9690	-.0063	.1132	.2334	.7360	.9341	1.1494	1.0803	.9684	.9665	
19	-.4747	-.4952	-.4410	-.1696	.0320	.1992	.2351	.3853	.3849	.5649	.8990	1.1403	1.4520	.7001	-.0827	-.2558	
20	-.2948	-.3229	-.3145	-.3453	-.1639	.0191	.1801	.3661	.4720	.7664	1.0853	1.2370	1.4714	1.2485	.8745	.6074	
21	-.4198	-.3053	-.2162	-.4364	-.3380	-.3199	-.2546	-.1351	-.0992	-.0299	.0429	.4660	.5127	1.3435	.9163	.7498	
22	-.3656	-.3668	-.2969	-.2808	-.3473	-.3282	-.2695	-.1699	-.1284	.0891	.6019	.8577	1.4984	1.4842	1.3115	1.1851	
23	-.3520	-.2856	-.2714	-.0889	.0334	.1509	.0649	.1543	.2117	.5763	1.0947	1.1949	1.5155	1.4220	1.0026	.9477	
24	-.3707	-.3345	-.2778	-.4727	-.3357	-.2869	-.1597	-.1236	-.1169	-.1267	-.0712	.1126	.7537	.7718	.6537	.5492	
25-40	-.3786	-.0398	.0872	.1627	-.1797	.2511	.4136	.6038	.1291	.3524	.5641	.4351	1.0510	.9828	.8282	.6054	
26-41	-.4753	-.4062	-.2668	-.1576	.0028	.0933	.2421	.1549	.2448	.2607	.3719	.4379	1.1294	1.1018	.9339	.7449	
27-42	-.4598	-.4228	-.3892	-.4551	.4078	-.2596	.1205	.0150	.3706	.2455	.3422	.4060	.9072	1.1251	.9612	.8116	
28-43	.0494	.2933	.3661	.4378	.3462	.1783	.3628	.2497	.3572	.2063	.1091	.0326	-.1491	-.2324	-.3097	-.3469	
29-44	-.4363	-.4609	-.4004	-.2782	-.1260	-.0709	.1805	.2881	.2111	.6065	.6497	.8158	1.3310	1.1768	.8457	.5985	
30-45	-.3189	-.3290	-.3282	-.1247	.0368	-.2324	-.0993	.2029	-.2340	.3417	.5802	.7072	.9205	.7451	.5371	.4409	
31-46	-.1913	-.0101	-.0074	-.3009	-.2585	-.1973	-.1497	.4244	-.1978	.5722	.8426	1.0801	1.3764	1.2466	1.0040	.8422	
32-47	-.4574	-.4435	-.3973	-.4793	-.4006	-.3093	-.2035	0	-.1899	0	0	0	0	0	0	0	
33-48	-.4129	-.4198	-.3593	-.5049	-.3985	-.2993	-.1801	.6997	-.0938	.5805	.6556	.7917	1.3963	1.2856	1.0110	.7648	
34-49	-.4022	-.4435	-.3793	-.5067	-.3956	-.2724	-.1156	.6294	-.0355	.6053	.7778	.8860	1.3083	1.2641	1.0048	.8312	
35-50	.5613	.5962	.6121	-.4391	-.3668	-.3182	-.1741	-.2259	-.1149	-.0812	.3947	.7217	1.4626	1.4453	1.3969	1.3843	
36-51	-.3820	-.4021	-.3124	-.3668	-.2869	-.2438	-.2551	-.0874	-.1322	-.2194	-.1799	-.1674	-.0012	.0302	.0212	-.0007	
37-52	.0360	-.0024	-.0955	-.2226	-.2275	-.1655	-.0626	-.0764	-.0723	.0671	.5281	.7946	1.4643	1.4153	1.3000	1.2772	
38-53	-.4862	-.4548	-.4593	-.4885	-.4138	-.3423	-.0736	-.1212	-.1341	.1870	.5625	.8485	1.4177	1.4711	1.4117	1.3363	
39-54	-.4337	-.4212	-.3255	-.4458	-.3396	-.2287	-.1070	-.1432	-.0902	.2186	.5624	.7715	1.2416	1.2140	1.0990		

TABLE IV. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 2.00$ AND WITH THE CANARD DEPLOYMENT ANGLE = 30°

Orifice Number	Pressure coefficient, C_p														
	$\alpha = -118.9^\circ$	$\alpha = -93.2^\circ$	$\alpha = -78.4^\circ$	$\alpha = -52.5^\circ$	$\alpha = -38.3^\circ$	$\alpha = -28.1^\circ$	$\alpha = -1.64^\circ$	$\alpha = 1.57^\circ$	$\alpha = 13.7^\circ$	$\alpha = 38.8^\circ$	$\alpha = 78.3^\circ$	$\alpha = 94.0^\circ$	$\alpha = 109.9^\circ$	$\alpha = 118.9^\circ$	
1	-0.2828	-0.2581	-0.1580	0.6037	1.1181	1.3205	1.6632	1.6457	1.5847	1.0618	-0.0209	-0.0982	-0.1824	-0.2228	
2	.5882	1.3404	1.5857	1.5450	1.3018	.9899	.2327	.1720	.2953	.0383	-.0781	1.8979	-.2317	1.9566	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	.9742	1.5195	1.6513	.7425	.2343	.1986	-.1260	-.1504	-.1880	-.2293	-.1363	-.2409	-.2714	-.2553	
5	.9260	.9209	.9292	.8437	.8323	.3780	-.0557	-.6000	-.0688	-.2598	-.1650	-.2418	-.2592	-.2788	
6	1.2360	1.6310	1.6193	1.0545	.6212	.4028	-.0329	-.0549	-.1133	-.1703	-.1532	-.2480	-.2828	-.2853	
7	1.2358	1.6394	1.6096	1.0448	.6028	.3955	-.0241	-.0486	-.0631	-.2328	-.1472	-.2503	-.2517	-.2210	
8	-.1070	-.0723	-.0474	.1132	.4246	.6684	.8625	.8135	.5642	.5035	.0605	.0256	-.1917	-.0890	
9	-.2528	-.2427	-.1544	.0136	-.0071	.0724	.1466	.1434	.4738	.9848	1.3304	1.1161	.8757	.6620	
10	-.2329	-.2258	-.1591	-.0443	-.1588	-.0681	.3223	.2579	.3176	.9361	1.4884	1.3045	.8812	.7954	
11	-.2458	-.2558	-.1227	-.2187	-.1450	-.0678	-.0981	-.0102	.3146	.9288	1.6271	1.6248	1.6396	1.6746	
12	-.2245	-.1834	-.0961	-.2002	-.2270	-.2485	-.0899	-.0979	.0400	.8586	1.4419	1.4928	1.5549	1.6833	
13	-.1449	-.1091	-.0969	-.1652	-.2152	-.2242	-.0377	-.0214	-.1327	-.2351	-.0602	-.0009	-.0867	-.1283	
14	-.2873	-.2786	-.2638	-.2455	-.1890	-.1127	.3703	.4293	.4029	1.0209	1.1763	.4940	-.1372	.0342	
15	-.1198	.0221	.0317	.0124	-.0218	-.0398	.3834	.4524	.6340	1.0486	1.3054	1.2223	.8897	.6405	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	-.2347	-.2153	-.1285	-.2098	-.2258	-.2091	-.0722	-.0277	.1753	.8495	1.4510	1.4889	1.4775	1.4868	
18	-.2175	-.2075	-.1543	2.2314	-.1622	-.0905	.0568	.1188	.3362	1.0860	1.3022	1.2544	1.1800	1.1678	
19	-.3236	-.2892	-.2568	.0210	-.0203	-.1652	.1847	.2311	.5195	1.1480	1.6171	.8569	-.0227	.1516	
20	-.1727	-.1703	-.1519	-.1646	-.1149	-.0007	.3078	.3585	.7154	1.3784	1.6189	1.3982	.9764	.6861	
21	-.2380	-.2075	-.1564	-.0860	-.1800	-.1546	.0729	.0923	.1877	.3241	1.6602	1.4861	1.0515	.9931	
22	-.2074	-.1603	-.1221	-.2428	-.2031	-.1376	-.0238	.0189	.1276	.9174	1.6330	1.6361	1.4790	1.4117	
23	-.2098	-.1171	-.1434	-.0767	.0269	.1461	.1882	.2325	.5377	1.3937	1.6534	1.5649	1.1923	1.1437	
24	-.1998	-.1549	-.0855	-.2226	-.1557	-.1768	.0008	-.0149	-.0551	.1867	.8836	.9296	.8077	.6793	
25-40	-.1495	.1583	.2357	.2773	.3473	.4941	.3789	.2306	.3457	.6709	1.2266	1.1851	.9860	.6933	
26-41	-.2485	-.1611	.0015	.0440	.2315	.2002	.0282	.2808	.3133	.5564	1.2820	1.2837	1.0986	.7881	
27-42	-.2914	-.2313	-.1621	-.2298	-.1587	-.0878	-.0560	.3839	.1810	.5216	1.0536	1.3127	1.1287	.8921	
28-43	.1243	.4562	.5518	.6240	.1929	.2265	.2083	.4594	.2183	.1748	.0337	-.0097	-.0896	-.1409	
29-44	-.2493	-.2171	-.1620	-.0757	-.3570	.0618	.1931	.2012	.6304	.9202	1.4806	1.3458	.9693	.6518	
30-45	-.0550	-.0888	-.1004	.0661	.2991	-.0589	.4230	-.0746	.4260	.8293	1.0953	.9435	.7404	.7036	
31-46	.0100	.1530	.1415	-.0840	-.0379	-.0296	.4225	-.0404	.6311	1.1640	1.5060	1.4070	1.1670	1.0932	
32-47	-.2545	-.2047	-.1567	-.2234	-.1526	-.1320	0	-.0403	0	0	0	0	0	0	
33-48	-.2580	-.2156	-.1327	-.2346	-.1499	-.1540	.7015	.0431	.6326	.9592	1.5344	1.4464	1.1308	.7940	
34-49	-.2658	-.2331	-.1686	-.2632	-.1956	-.0920	.6341	.1069	.7049	1.0548	1.4433	1.4251	1.1651	.7380	
35-50	.3099	.4145	.5949	-.2295	-.1324	-.1614	-.0550	-.0445	.0457	.7493	1.5800	1.5917	1.6062	1.6702	
36-51	-.2359	-.2038	-.1095	-.1365	-.2498	-.2527	-.0676	-.0263	-.0835	-.0184	.0943	.1915	.2319	.2163	
37-52	.1798	.1947	.0504	-.0802	-.0600	-.0347	.0392	.0008	.1535	.8475	1.6024	1.5584	1.5157	1.5490	
38-53	-.2464	-.2459	-.2040	-.2293	-.1786	-.1437	-.0108	-.0652	.2662	.9320	1.5660	1.6455	1.5596	1.5525	
39-54	-.2874	-.2273	-.0996	-.1962	-.1136	-.1335	.0160	.3275	.2471	.8797	1.3480	1.4457	1.4095	1.3229	

TABLE V. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 0.70$ AND WITH THE CANARD DEPLOYMENT ANGLE = 60°

Orifice number	Pressure coefficient, C_p								
	$\alpha = -99.5^\circ$	$\alpha = -78.4^\circ$	$\alpha = -19.5^\circ$	$\alpha = -1.07^\circ$	$\alpha = 1.52^\circ$	$\alpha = 20.1^\circ$	$\alpha = 38.7^\circ$	$\alpha = 78.4^\circ$	$\alpha = 99.5^\circ$
1	-0.5606	-0.8188	0.8517	1.1510	1.1412	0.8670	0.1020	-0.6719	-0.4602
2	.5073	.9974	.6026	.2753	.2703	.2800	.1000	-.3593	-.5909
3	0	0	0	0	0	0	0	0	0
4	.9072	1.1300	-.6685	-.4119	-.3551	-.2555	-.2459	-.3457	-.4021
5	1.0663	1.1152	.0709	-.1245	-.1375	.0017	-.1809	-.4964	-.5446
6	1.0859	1.1047	.0988	-.0710	-.0677	.2011	-.1304	-.5073	-.4993
7	1.0788	1.0806	.1007	-.0468	-.0399	.1256	-.1917	-.4837	-.4799
8	-.7208	-.7967	-.3835	.0605	.1179	.2020	.1466	-.10646	-1.7085
9	-.8762	-.9299	-.4047	.3034	.3382	.6492	.6648	.5524	.2301
10	-1.0791	-1.1660	-.2905	-.1669	-.2199	.0107	.5170	.8670	.4722
11	-.8227	-.9139	-.5315	-.0637	-.0514	.2234	.5991	1.0286	.9770
12	-.2303	-.2639	-.4316	-.2090	-.2172	-.1285	.4379	.8417	.8110
13	-1.0009	-1.7050	.2273	.0688	.1052	-.2509	-.7137	-.8558	-1.2467
14	-.7379	-.6772	-.2967	.0788	.1264	.3189	.3691	.2464	-.6966
15	-.8620	-.7406	-.1022	.2512	.2877	.5110	.5932	.5083	.2120
16	0	0	0	0	0	0	0	0	0
17	-.4566	-.4648	-.6293	-.3922	-.3375	.0564	.4556	.8352	.7790
18	-.4617	-.5021	-.1539	-.0154	.0336	.2324	.5689	.6117	.4880
19	-.8113	-.6834	-.2481	.0556	.1044	.4326	.8435	1.0381	.0391
20	-.6051	-.7363	.0339	.2146	.2800	.6013	.9554	1.0511	.7144
21	-.5307	-.5135	-.1154	-.8280	-.7933	-.3150	.4473	1.1053	.8589
22	-.4565	-.4733	-.3608	-.1669	-.1325	.1401	.5953	1.1029	1.0676
23	-.4153	-.4922	.0926	.1926	.2745	.6000	.8256	1.1364	.9652
24	-.6964	-.4435	-.1848	-.0532	-.0484	-.1543	-.2159	.0936	.0479
25-40	-.2160	.1081	.2500	.4265	-.0072	.7818	.8659	.3875	.1255
26-41	-1.6190	-1.0522	.1960	.1929	-.1510	.6925	.5286	.5621	.2885
27-42	-.9944	-.8291	.1294	.0908	.1386	.1140	.2302	.5453	.2754
28-43	-.7022	-.2147	-.0413	-.0817	.2765	-.9455	-1.9684	-.6334	-.7749
29-44	-1.5806	-1.2644	.0715	.2866	-.2812	.5996	.9471	.8592	.5898
30-45	.8205	.7478	-.6723	.1045	-.10508	.1695	.1926	.1918	.0084
31-46	-.1496	-.1359	-.13076	.4119	-.2846	.6254	.8729	.8664	.5931
32-47	-1.5103	-1.4011	-1.3552	0	-.15559	0	0	0	0
33-48	-.7443	-.6291	-.13486	.6565	-.2974	.6292	1.0191	1.0013	.7283
34-49	-.6901	-.5995	-.5774	.4338	-.8137	.6021	.8721	1.0470	.8210
35-50	-1.1459	-1.2580	-.1199	-.3780	-.3898	.0759	.4917	1.0329	.9720
36-51	-.5033	-.5679	-.3824	-.2783	-.2166	-.8183	-.9650	-.6562	-.6699
37-52	-.3631	-.4843	-.1489	-.0335	-.1396	.3142	.7611	.9951	.8112
38-53	-1.4481	-.9528	-.1658	-.1802	-.3241	.0578	.4878	1.0419	1.0924
39-54	-.6524	-.6267	-.2238	-.1520	-.2959	.1538	.4908	1.0482	1.0339

TABLE VI. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.10$ AND WITH THE CANARD DEPLOYMENT ANGLE = 60°

Orifice number	Pressure coefficient, C_p											
	$\alpha = -99.4^\circ$	$\alpha = -78.4^\circ$	$\alpha = -59.4^\circ$	$\alpha = -38.4^\circ$	$\alpha = -19.6^\circ$	$\alpha = -1.30^\circ$	$\alpha = 1.50^\circ$	$\alpha = 19.9^\circ$	$\alpha = 38.7^\circ$	$\alpha = 59.7^\circ$	$\alpha = 78.9^\circ$	$\alpha = 99.4^\circ$
1	-0.5097	-0.6384	-0.3613	0.6125	1.1475	1.3440	1.3395	1.1595	0.5776	-0.1525	-0.3434	-0.4243
2	.7347	1.1643	1.3178	1.0972	.8184	.5551	.5432	.5964	.3733	-.0613	-.2155	-.3332
3	0	0	0	0	0	0	0	0	0	0	0	0
4	1.0802	1.3019	1.0639	.1193	-.4677	-.3011	-.3301	-.7558	-.8435	-.9193	-.8037	-.5096
5	1.2304	1.2796	1.0600	.5310	.1299	-.2720	-.2901	-.2496	-.5690	-.6978	-.6755	-.5062
6	1.2601	1.2672	1.0223	.4974	.0591	-.2387	-.2433	-.2381	-.5505	-.6205	-.6765	-.5299
7	1.2504	1.2587	1.0010	.4670	.1270	-.2023	-.1821	-.0867	-.4908	-.5515	-.6498	-.5276
8	-.7014	-.7178	-.7623	-.5231	-.0473	.3338	.3784	.5329	.5665	.1566	.4157	-.7728
9	-.6438	-.7557	-.9606	-.7354	.0391	.4927	.6279	.8980	.9773	.9165	.8250	.5143
10	-.7731	-.7419	-.8764	-.7786	-.0143	.2139	.1808	.2018	.7819	1.0203	1.1112	.6852
11	-.6631	-.7748	-.8700	-.6969	-.3273	.1012	.0142	.4432	.8642	1.1489	1.2546	1.1449
12	-.1700	-.2701	-.4030	-.3274	-.5089	-.4414	-.3972	-.0399	.7857	1.1099	1.0935	1.0210
13	-.8387	-.7650	-.7104	-.7669	-.5295	-.0960	-.0246	-.6059	-.6381	-.7674	-.6250	-.6284
14	-.6913	-.7042	-.9465	-.6480	-.0991	.3188	.3793	.6016	.7098	.7156	.6061	-.1949
15	-.6262	-.6811	-.9797	-.5100	.0546	.5147	.5656	.7862	.8797	.8867	.7986	.5104
16	0	0	0	0	0	0	0	0	0	0	0	0
17	-.4899	-.5945	-.7712	-.6359	-.6005	-.4657	-.3913	.2650	.7364	1.0068	1.0766	.9972
18	-.4812	-.6339	-.6205	-.6177	-.2736	-.0226	.0916	.4509	.8433	.9629	.9003	.7331
19	-.7181	-.6744	-.6489	-.2909	.0270	.2954	.3578	.6965	1.0657	1.2884	1.2255	.2678
20	-.5891	-.7022	-.7115	-.2784	.2871	.5046	.5401	.8366	1.1512	1.3051	1.2398	.8953
21	-.5173	-.6429	-.9265	-.6943	-.5884	-.5314	-.5164	-.3836	.6492	1.1576	1.2986	1.0159
22	-.4709	-.5819	-.7155	-.7132	-.5191	-.3286	-.2710	.3506	.7732	1.1182	1.2991	1.2118
23	-.4517	-.5876	-.4547	.2277	-.0198	.2142	.2977	.7928	1.0278	1.1883	1.3152	1.0797
24	-.7921	-.5648	-.7526	-.4780	-.3002	-.2102	-.2176	-.4207	.0021	.3177	.5291	.4586
25-40	.2808	.5585	.6617	.5710	.4492	.6564	.2314	1.0555	1.1325	.8951	.6586	.2379
26-41	-.6370	-.3178	.0828	.2854	.4097	.3436	.1655	.9555	.8143	1.0250	.8114	.5160
27-42	-.9130	-.8210	-.4424	.0931	.3477	.2316	.3784	.4278	.7079	.7484	.8040	.5181
28-43	-.2274	.0436	.0980	-.1228	.2079	.1727	.5018	-.4200	-.7160	-.9535	-.7898	-.9990
29-44	-.6069	-.4207	-.1230	.1456	.3104	.5105	.0183	.8522	1.1847	1.1908	1.0768	.7833
30-45	1.0643	1.0095	.6199	-.2168	-.4245	.4373	-.5860	.5801	.6941	.7288	.6438	.3915
31-46	.3732	.3664	.0660	.2385	-.4557	.6639	-.6003	.9099	1.1200	1.1785	1.1131	.8125
32-47	-.5639	-.4936	-.6147	-.6684	-.5203	0	-.7007	0	0	0	0	0
33-48	-.7129	-.9183	-.9678	-.7133	-.4821	.8223	-.5524	.8474	1.2518	1.2609	1.2125	.8855
34-49	-.7564	-.8228	-.9583	-.6836	-.3571	.6616	-.2705	.8433	1.1160	1.2263	1.2414	.9732
35-50	-.6845	-.6336	-.4602	-.3089	-.3381	-.1459	-.4540	.3029	.8244	1.1345	1.2930	1.1244
36-51	-.5067	-.5171	-.0732	-.6021	-.2231	-.4275	-.1739	-.8466	-.9653	-.9591	-.8914	-.8282
37-52	.2169	.1057	-.0360	-.1726	.0587	-.1310	-.2683	.5005	1.0455	1.1055	1.2198	.9959
38-53	-.7763	-.7600	-.5756	-.4209	-.0067	-.3328	-.5372	.2952	.8035	1.0658	1.2328	1.2262
39-54	-.5493	-.7841	-.9883	-.4500	-.1522	-.3149	-.3784	.4109	.7948	1.0457	1.2236	1.1976

TABLE VII. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.50$ AND WITH THE CANARD DEPLOYMENT ANGLE = 60°

Orifice number	Pressure coefficient, C_p															
	$\alpha = -118.9^\circ$	$\alpha = -92.7^\circ$	$\alpha = -78.4^\circ$	$\alpha = -60.9^\circ$	$\alpha = -38.5^\circ$	$\alpha = -28.1^\circ$	$\alpha = -12.7^\circ$	$\alpha = -1.69^\circ$	$\alpha = 1.62^\circ$	$\alpha = 13.8^\circ$	$\alpha = 29.9^\circ$	$\alpha = 38.9^\circ$	$\alpha = 53.3^\circ$	$\alpha = 78.9^\circ$	$\alpha = 94.6^\circ$	$\alpha = 118.9^\circ$
1	-0.3669	0.1586	-0.1010	0.0776	0.9696	-1.1969	1.4664	1.4977	1.5049	1.4540	1.1740	0.9106	0.4498	0.0809	0.0021	-0.2272
2	.2651	1.1382	1.4131	1.5072	1.2461	1.1070	.8193	.3906	.4495	.3794	.3998	.3977	.3898	.2133	.1921	-.1529
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	.8371	1.4085	1.5125	1.2072	-.0066	-.0431	-.2055	-.2952	-.2634	-.2767	-.3457	-.4402	-.5383	-.5676	-.4592	-.3639
5	.6820	.6700	.6577	.7938	.6234	.4364	.0832	-.0302	-.0826	-.0394	-.2446	-.3662	-.5023	-.5216	-.4355	-.4367
6	1.1637	1.5059	1.4828	1.1891	.5625	.3500	.0494	-.0939	-.1254	-.0482	-.2072	-.2457	-.3047	-.4515	-.4212	-.4561
7	1.1547	1.5087	1.4702	1.1730	.5556	.3535	.0361	-.1177	-.1002	-.1171	-.2181	-.3333	-.3675	-.4829	-.4286	-.3262
8	-.4234	-.0984	-.2855	-.2455	-.0449	.0794	.3786	.4479	.2878	.2421	.6310	.6273	.6271	.0719	-.2139	-.5245
9	-.4398	.0985	-.1950	-.4575	-.3878	-.2811	.3114	.3592	.4595	.9882	1.1397	1.1608	1.1373	1.1023	.9076	.5054
10	-.4533	.0037	-.1811	-.4880	-.4144	-.1951	.2808	.5264	.4910	.1706	.7436	.9737	1.1840	1.3364	1.0755	.6068
11	-.4609	.0059	-.1888	-.5011	-.3877	-.2712	-.3639	-.0547	.1788	.4653	.8466	1.0348	1.2379	1.4544	1.4218	1.3464
12	.2732	.4474	.2914	-.1088	-.2199	-.3555	-.2440	-.2995	-.3255	-.2175	.6645	.9307	1.0992	1.2945	1.2885	1.3244
13	-.3566	-.2924	-.2094	-.2001	-.3387	-.3637	-.1977	-.0697	-.0170	-.3179	-.4087	-.5010	-.4723	-.1451	-.0960	-.3325
14	-.4254	-.1089	-.1950	-.4817	-.2880	-.1805	.1908	.2163	.2651	.3921	.5880	.7739	.9222	.8099	.3209	-.4206
15	-.4215	.7528	-.1398	-.4929	-.3816	-.2008	.1320	.4939	.6376	.7879	1.0092	1.0625	1.1104	1.0724	.8905	.4261
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	-.4556	.1978	-.0298	-.4979	-.4238	-.4088	-.3110	-.1607	-.0972	.1966	.7316	.9333	1.1286	1.3064	1.2749	1.1313
18	1.3516	.6677	-.0569	-.5110	1.2033	1.1168	.8414	.1660	.6060	.4721	.8770	1.0487	1.1770	1.1612	1.0633	.9244
19	-.4395	-.1247	-.2096	-.3620	.0263	.2075	.1225	.2032	.2687	.5157	.8420	1.1269	1.3847	1.4537	.7490	-.2728
20	-.4355	.0588	-.1524	-.3509	-.0344	.0234	.2912	.3806	.4589	.7480	1.1513	1.3076	1.4487	1.4548	1.2250	.6185
21	-.4011	.1934	-.0781	-.4526	-.3019	-.2878	-.2493	-.1219	-.0855	-.0186	.0855	.7746	1.1627	1.5094	1.3391	.7777
22	-.4202	.2153	-.0323	-.5147	-.3880	-.3226	-.2289	-.0874	-.0272	.2090	.7645	.9619	1.1738	1.5010	1.4757	1.2106
23	-.4326	.2170	-.0153	-.3017	-.1451	-.0455	.0413	.2792	.3448	.7748	1.1510	1.2315	1.3294	1.5100	1.4054	.8958
24	-.3739	-.0824	-.0483	-.4606	-.3454	-.2786	-.1694	-.1361	-.1063	.2320	-.0220	.2115	.4201	.8128	.8192	.5561
25-40	.1813	.6997	.8517	.9049	.6711	.5903	.2586	.7931	.2708	.9724	.9027	1.2916	1.2861	1.0488	.9024	.4921
26-41	-.2626	-.0660	.1146	.3862	.4483	.4492	.3433	.1697	.1618	.6708	.8472	.8261	1.2408	1.0750	.9025	.5065
27-42	-.4594	-.0620	-.2667	-.0053	.2883	.3214	.3672	.1841	.4059	.3984	.8858	.6964	.7830	1.0809	.9147	.5352
28-43	-.0955	.2649	.4315	.4092	.1553	.1646	.2787	.1925	.6963	-.0501	-.2573	-.3586	-.4421	-.5584	-.5363	-.5680
29-44	-.1956	-.0538	.0457	.2013	.3393	.2951	.2555	.2424	.1538	.9085	1.0858	1.2562	1.3769	1.3193	1.1415	.5075
30-45	1.0979	1.3175	1.2177	.3450	.1571	.0089	-.1316	.6810	-.2508	.7931	.9629	.9858	1.0108	.9634	.8165	.4958
31-46	.4725	.7285	.6833	.0974	-.0639	-.0732	-.1733	.8968	-.2263	1.0945	1.2837	1.3227	1.3605	1.3600	1.1578	.7774
32-47	-.2013	-.0647	-.0037	.6228	.6401	.1489	.1996	0	-.2718	0	0	0	0	0	0	0
33-48	-.4332	.0395	-.2434	-.3957	-.2619	-.2153	-.1435	.8645	-.1351	.8976	1.1858	1.3545	1.4350	1.4353	1.2441	.5868
34-49	-.4851	.0188	-.2151	-.4276	-.3519	-.2666	-.0053	.7468	.0098	.9124	1.1584	1.2589	1.3613	1.4592	1.2995	.5814
35-50	.5073	.5603	.6152	-.1017	-.0976	-.1382	-.1520	.1384	-.2308	.3763	.6760	.9065	1.2259	1.4553	1.4081	1.3137
36-51	-.3462	.1889	.0268	-.4669	-.3864	-.2494	-.1731	-.2123	.0422	-.4272	-.4671	-.4701	-.4872	-.4164	-.3752	-.3411
37-52	.6567	.5642	.4603	.1664	.1209	.0713	.0292	.0829	-.1331	.4615	.9719	1.1606	1.3035	1.4423	1.3030	1.1434
38-53	-.2140	-.1682	-.1994	-.2064	-.1303	-.1023	-.0221	-.0545	-.3127	.2218	.7723	.9488	1.1623	1.4515	1.4949	1.4084
39-54	-.4832	.1003	-.1695	-.4236	-.3252	-.1119	-.0865	-.0767	-.1087	.3780	.8509	1.0009	1.1588	1.4407	1.4686	1.3154

TABLE VIII. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 2.00$ AND WITH THE CANARD DEPLOYMENT ANGLE = 60°

Orifice number	Pressure coefficient, C_p																
	$\alpha = -118.9^\circ$	$\alpha = -93.1^\circ$	$\alpha = -78.9^\circ$	$\alpha = -52.6^\circ$	$\alpha = -38.9^\circ$	$\alpha = -27.8^\circ$	$\alpha = -12.8^\circ$	$\alpha = -1.64^\circ$	$\alpha = 1.59^\circ$	$\alpha = 13.8^\circ$	$\alpha = 30.0^\circ$	$\alpha = 38.9^\circ$	$\alpha = 54.0^\circ$	$\alpha = 78.9^\circ$	$\alpha = 93.9^\circ$	$\alpha = 118.9^\circ$	
1	-0.2967	-0.2686	-0.1594	0.6123	1.0111	1.3104	1.5842	1.6497	1.6469	1.5919	1.2985	1.0534	0.6360	0.3730	0.2378	-0.0220	
2	1.3494	1.2679	1.5862	1.5540	1.3960	1.2249	.4757	.2215	.1770	.3646	.2481	.2159	.4897	1.2239	1.2977	.0932	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	1.0176	1.5619	1.6395	.7936	.2519	.1987	-.0264	-.1646	-.1798	-.1326	-.1740	-.2555	-.2824	-.3016	-.2691	-.2632	
5	.9258	.9265	1.1794	.8691	.7508	.4012	.0861	.0296	.0146	-.0426	-.2180	-.2795	-.2879	-.3124	-.2606	-.2670	
6	1.2476	1.6495	1.6049	1.0349	.7039	.4152	.0995	-.0179	-.0272	-.0497	-.1301	-.2447	-.2473	-.2803	-.2656	-.2911	
7	1.2420	1.6460	1.5959	1.0293	.6923	.3800	.0688	-.0473	-.0620	-.1068	-.1663	-.1850	-.2324	-.2676	-.2625	-.2324	
8	-.2671	-.2543	-.1657	.0582	.1862	.3872	.1191	.1986	.1932	.2393	.4903	.3855	.6633	.2845	.0343	.1768	
9	-.2716	-.2589	-.2144	-.1896	-.1146	-.0221	.2288	.1127	.3174	1.1637	1.1404	1.3514	1.3217	1.2832	1.1011	.5934	
10	-.2647	-.2470	-.2424	-.1902	-.1766	-.0650	.3672	.2857	.2774	.2882	.8299	1.1322	1.3471	1.4824	1.2454	.8741	
11	-.2831	-.2490	-.2752	-.1935	-.1133	-.0486	.0230	.0080	.1743	.4828	.9979	1.2423	1.3939	1.6067	1.5813	1.6137	
12	.0548	.3478	.2581	.0067	-.0989	-.2144	-.2300	-.1942	-.2245	-.0792	.6137	1.1059	1.2426	1.4464	1.4627	1.4899	
13	-.1418	-.0768	-.0396	-.1310	-.1634	-.0206	-.1789	-.0411	.0024	-.1872	-.2733	-.2860	-.2162	.0707	.1358	-.1282	
14	-.3119	-.2772	-.2725	-.2477	-.2044	-.1842	.0378	.1903	.2626	.3910	.6222	.6601	.9734	1.0778	.5192	-.0096	
15	-.2681	-.2766	-.2114	-.2123	-.2689	-.1532	.0931	.2929	.2977	.6254	1.0715	1.1799	1.2424	1.2330	1.0637	.5775	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	-.2546	-.2137	-.2611	-.2617	-.2932	-.2349	-.1734	-.0290	.0204	.2934	.7902	1.0762	1.2917	1.4578	1.4399	1.3839	
18	1.9528	1.9137	2.2747	-.2584	1.9747	-.1202	-.0011	.3230	.3471	.6341	1.0496	1.2423	1.3304	1.3274	1.2323	1.0875	
19	-.3023	-.2738	-.2552	-.1164	-.0977	-.0180	.0553	.1768	.2393	.5274	.9560	1.0666	1.4586	1.6221	.9322	.1530	
20	-.2688	-.2662	-.2651	-.1936	-.0790	.0631	.1371	.2097	.2735	.5707	1.1593	1.4508	1.5798	1.6147	1.3947	.6370	
21	-.2357	-.2081	-.2869	-.2392	-.2259	-.1408	-.0580	.0060	.0227	.2002	.3446	.4712	1.2668	1.6591	1.5046	1.0328	
22	-.2391	-.2066	-.2702	-.2896	-.2444	-.1568	-.0249	.1043	.1602	.3315	.8083	1.0963	1.3113	1.6445	1.6364	1.4295	
23	-.2549	-.2279	-.2614	-.1595	-.1041	-.0140	.1622	.3985	.4737	.8070	1.3656	1.4775	1.4771	1.6581	1.5652	1.0850	
24	-.2111	-.1672	-.2481	-.2288	-.2373	-.1768	-.1063	-.0124	-.0474	-.0485	.0937	.3222	.5592	.9669	.9706	.6624	
25-40	.3583	.8642	1.0018	.9244	.7847	.6803	.2663	.6079	.0955	.8334	.9375	1.0191	1.5199	1.2340	1.0963	.5798	
26-41	-.0549	.1545	.3057	.4928	.4932	.4296	.2718	.1519	.2200	.5360	.8931	.9706	1.3735	1.2540	1.1000	.6319	
27-42	-.2553	-.1820	-.0513	.1906	.3086	.3821	.3547	.1902	.3958	.5248	.8996	.9259	.9051	1.2543	1.1053	.6721	
28-43	.2322	.3236	.6806	.4621	.3903	.4173	.5428	.1541	.6750	.0095	-.1258	-.1664	-.2108	-.2859	-.3136	-.3291	
29-44	.0222	.1265	.1999	.3496	.3334	.3706	.2393	.5261	.0917	.7621	1.1342	1.4178	1.5610	1.4910	1.3229	.5886	
30-45	1.2606	1.4553	1.1182	.4095	.2638	.1525	-.0081	.6468	-.1173	.9314	1.2946	1.2997	1.2083	1.1529	1.0125	.7349	
31-46	.5791	.8796	.7775	.1455	.1420	.1034	-.0416	1.0821	-.0378	1.0653	1.5647	1.6537	1.5440	1.5249	1.3355	.9809	
32-47	-.0213	.1405	.0907	-.0540	.0136	-.0081	-.0730	0	-.0901	0	0	0	0	0	0	0	
33-48	-.2490	-.2014	-.2320	-.1433	-.0847	-.0492	-.0242	.6672	.0294	.8879	1.4008	1.6213	1.6212	1.5953	1.4178	.5109	
34-49	-.2830	-.2381	-.2523	-.1858	-.1514	-.0863	.0162	.6164	.1413	.8617	1.3249	1.5445	1.5172	1.6182	1.4654	.3996	
35-50	.1451	.2713	.0586	.0128	-.0036	-.0452	-.0803	.3691	-.0680	.7255	.7701	1.0835	1.3388	1.6367	1.5566	1.6341	
36-51	-.1643	-.0672	-.1512	-.1926	-.1546	.0506	.0154	-.1407	.2082	-.2288	-.2479	-.2346	-.2625	-.1898	-.1690	-.0796	
37-52	.8989	.7274	.5928	.2824	.1970	.1213	.0144	.2921	-.0467	.7092	1.1516	1.4199	1.4748	1.6025	1.4756	1.4615	
38-53	.0151	-.0153	-.0206	-.0116	-.0118	.0090	.0006	.1031	-.1283	.4023	.8616	1.0573	1.3173	1.5870	1.6684	1.6354	
39-54	-.2864	-.2516	-.2450	-.2012	-.1474	-.0673	-.0304	.0384	.0216	.4390	.9960	1.1543	1.3099	1.5935	1.6480	1.5770	

TABLE IX. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 0.70$ AND WITH THE CANARD DEPLOYMENT ANGLE = 90°

Orifice number	Pressure coefficient, C_p									
	$\alpha = -99.1^\circ$	$\alpha = -78.5^\circ$	$\alpha = -19.4^\circ$	$\alpha = -1.12^\circ$	$\alpha = 1.57^\circ$	$\alpha = 19.1^\circ$	$\alpha = 19.9^\circ$	$\alpha = 38.9^\circ$	$\alpha = 90.0^\circ$	$\alpha = 111.2^\circ$
1	-0.5459	-0.9881	0.8788	1.1330	1.1051	0.8888	0.8727	0.1340	-0.3143	-0.3204
2	.4451	.9881	.5769	.3828	.3878	.4612	.4700	.3140	-.2000	-.4213
3	0	0	0	0	0	0	0	0	0	0
4	.9548	1.1333	-.5063	-.3477	-.3940	-.1865	-.1644	-.2325	-.3616	-.2966
5	1.0721	1.0998	.0651	-.1581	-.0953	-.1981	-.1938	-.7025	-.3721	-.3903
6	1.1056	1.0758	.0912	-.1114	-.0143	-.0361	-.0685	-.8051	-.3771	-.4762
7	1.1119	1.0771	.0895	-.0208	.0341	.0446	.0305	-.6924	-.5180	-.5887
8	.7942	-.7758	-.2971	.1053	.1712	.2807	.2699	.2731	-.5829	-.1.6057
9	-.7284	-.8704	-.2137	.3554	.4384	.6557	.6908	.7039	.3377	.0204
10	-.7090	-.2165	-.1611	-.0509	-.0224	.1424	.1489	.5763	.5117	.1702
11	-.6228	-.6760	-.3864	-.0984	-.0608	.1818	.1998	.5771	.7385	.6501
12	-.1658	-.1891	-.4368	-.3371	-.3284	-.3261	-.3021	.4193	.5845	.2891
13	-.1.5947	-.1.4714	-.2631	-.0439	-.0263	-.2128	-.2268	-.7162	-.9704	-.1.4068
14	-.7996	-.6858	-.2447	.1188	.1805	.3611	.3634	.4530	.1341	-.7176
15	-.6698	-.7864	-.0378	.2893	.3347	.5294	.5387	.5977	.2757	-.0621
16	0	0	0	0	0	0	0	0	0	0
17	-.4496	-.4661	-.6256	-.3873	-.3658	.0676	.0842	.5109	.5411	.4242
18	-.4816	-.5582	-.3798	-.0239	.0186	.2040	.2202	.6212	.3706	.1467
19	-.9050	-.7402	-.1850	.1164	.1636	.4634	.4697	.8857	.8841	-.0189
20	-.4967	-.6880	.0743	.2411	.2896	.5945	.6023	.9491	1.0453	.7320
21	-.5514	-.5174	-.9884	-.6386	-.6498	-.2530	-.2368	.4820	.9293	.6682
22	-.4262	-.4861	-.4555	-.1700	-.1417	.1638	.1712	.5871	.9052	.8523
23	-.3572	-.4808	.0417	.1622	.2410	.5789	.6061	.8432	.9514	.7467
24	-.4967	-.4392	-.1821	-.0635	-.0415	-.1398	-.1380	-.1676	.1188	.0199
25-40	.7175	.9948	.1981	.6287	.2567	.9626	.9573	1.0182	.9301	.6465
26-41	-.3154	.1707	.2328	.4546	-.4579	.9132	.9554	1.0662	.6352	.3211
27-42	-.1.4997	-.7731	.2939	.4386	-.2149	.7588	.7637	1.0424	.6569	.3379
28-43	-.6796	-.6126	.0670	-.3349	.4081	-1.3024	-1.4787	-.8430	-.5702	-.6260
29-44	-.3298	.0668	.0792	.4097	-.5740	.8261	.8496	1.0487	.8715	.5433
30-45	1.1423	1.0285	-.4456	.2724	-.8544	.4088	.4081	.4781	.3615	.1526
31-46	.8043	.6991	-.0803	.5835	-.2171	.8205	.7934	1.0173	.9120	.6450
32-47	-.2689	-.2039	-1.2121	0	-.1.5776	0	0	0	0	0
33-48	-.1.4625	-.1.1897	-1.2161	.7312	-.6573	.9359	.9532	1.1195	.9906	.6240
34-49	-.5212	-.5946	-.5036	.5398	-.1.7409	.9431	.9434	1.1058	.9358	.5896
35-50	-.5133	-.3157	-.1221	-.2780	-.5167	.3575	.3411	.7647	1.0810	.9342
36-51	-.4980	-.5684	-.2713	-.4157	-.0352	-.9329	-.9369	-.8547	-.5272	.5773
37-52	.4695	.2374	-.1323	.0651	-.1897	.4990	.5060	.9300	.9880	.7388
38-53	-.6171	-.5158	-.1626	-.1462	-.4773	.0391	.0748	.5637	.9902	1.0085
39-54	-.1.0858	-.9574	-.1610	-.0819	-.8281	.2258	.2284	.6537	1.0077	1.0034

TABLE X. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.10$ AND WITH THE CANARD DEPLOYMENT ANGLE = 90°

Orifice number	Pressure coefficient, C_P											
	$\alpha = -99.3^\circ$	$\alpha = -78.4^\circ$	$\alpha = -59.4^\circ$	$\alpha = -38.4^\circ$	$\alpha = -19.5^\circ$	$\alpha = -11.2^\circ$	$\alpha = 1.59^\circ$	$\alpha = 19.7^\circ$	$\alpha = 38.9^\circ$	$\alpha = 59.9^\circ$	$\alpha = 78.8^\circ$	$\alpha = 99.6^\circ$
1	-0.4160	-0.5848	-0.3631	0.6269	1.1541	1.3463	1.3356	1.1605	0.6620	0.0618	0.2245	-0.0119
2	.6261	1.1835	1.3105	1.0748	.8172	.6381	.6379	.7517	.4536	.3588	.1984	-.1434
3	0	0	0	0	0	0	0	0	0	0	0	0
4	1.1221	1.2921	1.1119	.2638	-.3531	-.3513	-.4607	-.6675	-.8342	-.6911	-.8773	-.5263
5	1.2580	1.2726	1.0580	.5599	.0550	-.2808	-.2808	-.4319	-.7133	-.6926	-.6527	-.4441
6	1.2732	1.2539	1.0046	.5058	.0477	-.2882	-.3621	-.3462	-.7133	-.6078	-.6416	-.5121
7	1.2755	1.2425	.9818	.4709	.1419	-.2385	-.2016	-.1456	-.7371	-.5373	-.6000	-.5084
8	-.5176	-.6408	-.8810	-.6005	-.0282	.3852	.4181	.6117	.5762	.2935	-.1968	-.6726
9	-.5872	-.7109	-.9984	-.4837	.1160	.4783	.6705	.8722	.9699	.8666	.7210	.4019
10	-.6652	-.7857	-.8793	-.3622	.4112	.2669	.3500	.4856	.8645	.9955	.9153	.5219
11	-.4739	-.6942	-.8807	-.8050	-.4116	.1385	.1045	.4898	.8480	1.0641	1.0079	1.0532
12	-.0622	-.1255	-.5324	-.4634	-.4153	-.5343	-.5443	-.1937	.7118	1.1324	.9874	.8489
13	-.7067	-.7334	-.7538	-.8138	-.5916	-.1555	-.1867	-.5460	-.7977	-.5282	-.4925	-.5791
14	-.5649	-.6292	-.1.0458	-.5635	-.0367	.3819	.4355	.6620	.7293	.7388	.5791	-.1603
15	-.5421	-.6401	-.9523	-.2751	.1675	.5612	.6036	.8063	.8811	.8441	.6716	.3829
16	0	0	0	0	0	0	0	0	0	0	0	0
17	-.4440	-.5601	-.7804	-.7347	-.6358	-.3199	-.2843	.3499	.8108	1.0472	.9438	.8189
18	-.4835	-.6002	-.6409	-.5433	-.3426	-.0359	-.0156	.4884	.9062	.9998	.7699	.5550
19	-.6460	-.6080	-.8789	-.2165	.0599	.3647	.4195	.7388	.1.0807	1.3072	1.2189	.3383
20	-.4819	-.6558	-.6058	-.1506	.3595	.5156	.5669	.8445	1.1628	1.3209	1.2257	.8888
21	-.4703	-.6098	-.9088	-.6815	-.5783	-.5310	-.5249	-.2866	.7240	1.2006	1.2785	1.0165
22	-.4498	-.5698	-.6906	-.6793	-.5029	-.2190	-.1656	.4125	.8334	1.1527	1.2732	1.2044
23	-.4368	-.5410	-.5306	.0258	-.0634	.2842	.3543	.8044	1.0584	1.2290	1.2846	1.0335
24	-.8544	-.5810	-.6569	-.4518	-.3062	-.2216	-.2332	-.3009	.1116	.4211	.5408	.4446
25-40	.9286	1.1889	1.1465	.7397	.3730	.8756	-.0945	1.1906	1.2467	1.0920	.6149	.4534
26-41	.1525	.5334	.8095	.6728	.4158	.7219	-.1463	1.1312	1.2575	1.1366	.8677	.5266
27-42	-.6404	-.2661	.3017	.5033	.4731	.6789	.1508	1.0583	1.2162	1.1582	.8821	.5256
28-43	-.5126	-.5479	-.1.299	.0722	.3445	.0465	.6202	-.7559	-.9451	-.5843	-.6636	-.4612
29-44	.2095	.4593	.6295	.5130	.3435	.6699	-.2148	1.0525	1.2651	1.2639	1.0841	.7355
30-45	1.2848	1.1872	.7595	-.2715	-.2962	.5975	-.6872	.7556	.8789	.8740	.7181	.4756
31-46	1.0173	.9472	.4780	-.4379	-.4870	.8180	-.7063	1.0482	1.2232	1.2681	1.1020	.8269
32-47	.2286	.2419	-.0362	-.5235	-.5136	0	-.8445	0	0	0	0	0
33-48	-.6253	-.5274	-.6142	-.5375	-.4356	.9341	-.6903	1.1464	1.2968	1.3224	1.1990	.7776
34-49	-.5272	-.5839	-.4538	-.6340	-.2486	.7981	-.7083	1.1465	1.3003	1.3490	1.1719	.7822
35-50	.1074	.1609	.2096	.1808	.1938	-.1479	-.7751	.5526	1.0080	1.2550	1.1378	1.1265
36-51	-.4624	-.5769	-.7474	-.6005	-.2668	-.7503	.1264	-.9203	-.8916	-.5977	-.6970	-.5141
37-52	.7561	.5910	.3548	.1782	.0205	.0189	.5298	.7226	1.1123	1.2062	1.1903	.9696
38-53	-.0983	-.0968	.0281	.0803	.0084	-.0702	-.8588	.3899	.8181	1.1587	1.2528	1.2668
39-54	-.6105	-.7705	-.4514	-.1153	-.0614	-.0531	-.7519	.5186	.9143	1.1609	1.2711	1.2350

TABLE XI. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.50$ AND WITH THE CANARD DEPLOYMENT ANGLE = 90°

Orifice number	Pressure coefficient, C_p															
	$\alpha = -118.9^\circ$	$\alpha = -92.9^\circ$	$\alpha = -78.4^\circ$	$\alpha = -59.9^\circ$	$\alpha = -38.5^\circ$	$\alpha = -27.9^\circ$	$\alpha = -12.8^\circ$	$\alpha = -1.67^\circ$	$\alpha = 1.62^\circ$	$\alpha = 13.9^\circ$	$\alpha = 29.8^\circ$	$\alpha = 53.3^\circ$	$\alpha = 69.4^\circ$	$\alpha = 78.9^\circ$	$\alpha = 94.7^\circ$	$\alpha = 118.9^\circ$
1	-0.3716	0.2596	0.1324	0.0654	0.9782	1.2183	1.4687	1.5157	1.5131	1.4614	1.1725	0.5124	0.6268	0.5414	0.3333	0.0212
2	.6888	1.0578	1.4297	1.5036	1.2253	1.0948	.8385	.3619	.5801	.4624	.4572	.5751	.5724	.5046	.5811	.0182
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	.9553	1.4407	1.5165	1.2254	.0413	-.0021	.0206	-.2353	-.2257	-.2837	-.3640	-.4488	-.4762	-.5061	-.5327	-.5070
5	.6734	.6782	.6606	.9263	.6119	.4136	.0591	.0162	.0345	-.1943	-.3370	-.5377	-.5162	-.4841	-.4806	-.4439
6	1.2765	1.4971	1.4673	1.1641	.5631	.3587	-.0378	-.1886	-.1942	-.2616	-.2965	-.3895	-.4316	-.4313	-.4164	-.4045
7	1.2279	1.5145	1.4640	1.1340	.5704	.3461	-.0255	-.1391	-.1659	-.1287	.3513	-.3747	-.4230	-.4442	-.4094	-.3202
8	-.4150	.1662	.1156	-.3516	-.1615	-.0553	.2705	.2217	.2179	.4890	.6396	.6410	.4120	.1854	-.2124	-.5113
9	-.3896	.0917	.0602	-.5330	-.3245	-.2193	.3823	.5101	.5410	.8339	1.1834	1.0870	1.0703	1.0348	.7817	.3635
10	-.4106	-.0054	.0153	-.5086	-.1648	.1381	.6683	.7272	.7054	.7586	.8961	1.1942	1.2269	1.1565	.9210	.4465
11	-.4081	.1263	.0195	-.5106	-.4052	-.3465	-.3412	.1492	.2944	.6180	.8695	1.2336	1.2733	1.2740	1.3389	1.1840
12	.2864	.5629	.2501	-.0314	-.2736	-.2867	-.2431	-.3314	-.3396	-.2097	.5959	1.1520	1.1683	1.2396	1.1288	1.0665
13	-.3058	-.1440	-.1630	-.2513	-.3419	-.3807	-.2760	-.1487	-.1479	-.2312	-.4374	-.3134	-.0818	-.0052	-.0448	-.3557
14	-.3959	.1428	.1075	-.5231	-.3125	-.2195	.0743	.2174	.2556	.4526	.6186	.9181	.9479	.8936	.3159	-.4310
15	-.4072	.7305	.7656	-.5164	-.2852	-.0950	.2004	.5136	.5202	.7566	1.0153	1.0492	1.0150	.9654	.7640	.3644
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	-.4210	.2235	.0648	-.5135	-.4775	-.4218	-.3032	-.1315	-.0281	.3317	.0845	1.1749	1.2346	1.2035	1.1176	.9235
18	1.2981	.7119	.0691	-.4614	-.3216	1.0595	-.0072	.1390	.2245	.4917	.9241	1.2142	1.1594	1.0672	.9016	.6974
19	-.3781	.0995	.1173	-.4250	-.0768	.0917	.0756	.2055	.2644	.5325	.8646	1.3888	1.5196	1.4680	.8071	-.2521
20	-.3862	.1932	.1123	-.3893	.0248	.0593	.3130	.4376	.4867	.7334	1.1758	1.4608	1.5166	1.4665	1.2323	.6333
21	-.4057	.2169	.0932	-.5053	-.3216	-.2704	-.2317	.0359	.1286	-.0197	.2643	1.1840	1.4876	1.5170	1.3388	.7994
22	-.3972	.2236	.0843	-.4761	-.4020	-.2975	-.1683	-.0129	.0413	.4012	.8402	1.2018	1.4353	1.5072	1.4777	1.1902
23	-.4041	.2416	.0849	-.2868	-.2432	-.0739	.1342	.3578	.4385	.7840	1.1864	1.3455	1.4786	1.5177	1.3721	.7370
24	-.3232	.0785	.0262	-.4133	-.2606	-.2663	-.1756	-.1405	-.1208	-.0737	.1721	.5469	.7837	.8537	.8090	.5237
25-40	.8359	1.2873	1.4315	1.3126	.8274	.6844	.2100	1.0953	.1404	1.2371	1.4633	1.3730	1.2105	1.1187	.8976	.4019
26-41	.2517	.6332	.8708	.9975	.7583	.6270	.3164	.8786	.0053	1.1329	1.3997	1.3983	1.2451	1.1480	.9003	.4493
27-42	-.2828	-.0728	.1607	.5648	.6366	.5900	.4291	.5435	.2789	1.0642	1.2318	1.3895	1.2635	1.1591	.8946	.5117
28-43	-.3681	.1358	.0523	.2643	.3430	.3502	.4836	.1283	.6879	-.2959	-.4776	-.4894	-.5086	-.4881	-.5239	-.5494
29-44	.3526	.6525	.7751	.8196	.6333	.4844	.2030	.6300	.0080	1.1560	1.4574	1.4672	1.4169	1.3494	1.0907	.4350
30-45	1.3104	1.5304	1.4112	.5314	.0638	-.1021	-.1931	.8763	-.3289	1.0215	1.1425	1.1268	1.0487	1.0333	.8507	.5351
31-46	1.0574	1.2958	1.1806	.5531	-.0047	-.0684	-.2186	1.0644	-.2912	1.2458	1.4173	1.4391	1.3910	1.3605	1.1588	.7807
32-47	.3419	.6236	.5855	.0839	-.0693	-.0685	-.2411	0	-.3224	0	0	0	0	0	0	0
33-48	-.2108	.0634	-.0336	-.2093	-.0945	-.0911	-.1400	1.0236	-.2426	1.3057	1.5252	1.5039	1.4980	1.4425	1.1462	.4563
34-49	-.3381	.1523	.1928	-.2452	-.1807	-.1367	-.0586	.9138	-.2729	1.2514	1.5130	1.5104	1.5121	1.4314	1.1546	.3564
35-50	.6246	.6281	.6595	.4222	.0873	-.0412	-.1719	.3807	-.3213	.4059	1.0159	1.2918	1.4452	1.4740	1.4077	1.3342
36-51	-.4004	.1945	.0212	-.4313	-.2938	-.2345	-.0311	-.3791	.4865	-.5412	-.5424	-.4841	-.5147	-.4784	-.5693	-.5118
37-52	1.1963	1.0315	.8752	.5727	.3245	.1738	-.0058	.2908	-.2867	.6404	1.1738	1.3890	1.4405	1.4396	1.2847	1.1184
38-53	.3431	.3478	.3620	.2724	.2002	.1127	-.1614	.2797	-.4254	.5029	.8126	1.2574	1.4670	1.4875	1.5238	1.4192
39-54	-.2780	.1756	-.1949	-.1017	.1032	.0420	-.1470	.1568	-.3975	.5631	.9683	1.2723	1.4293	1.5140	1.4497	1.3430

TABLE XII. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 2.00$ AND WITH THE CANARD DEPLOYMENT ANGLE = 90°

Orifice number	Pressure coefficient, C_p																
	$\alpha = -118.9^\circ$	$\alpha = -92.5^\circ$	$\alpha = -78.3^\circ$	$\alpha = -52.5^\circ$	$\alpha = -38.3^\circ$	$\alpha = -28.2^\circ$	$\alpha = -12.9^\circ$	$\alpha = -1.64^\circ$	$\alpha = 1.62^\circ$	$\alpha = 13.9^\circ$	$\alpha = 29.9^\circ$	$\alpha = 53.3^\circ$	$\alpha = 69.5^\circ$	$\alpha = 78.9^\circ$	$\alpha = 94.0^\circ$	$\alpha = 118.9^\circ$	
1	-0.2459	-0.2124	-0.1667	0.6086	1.1176	1.3098	1.6024	1.6632	1.6467	1.5821	1.2987	0.7241	0.7017	0.6737	0.5317	0.2156	
2	.0146	1.1067	1.5968	1.5402	1.3725	1.2696	.4860	.3023	.3928	.3406	.4430	1.2999	.6712	.6827	1.2543	1.4942	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	1.0944	1.5914	1.6447	.9226	.2326	.2188	-.0370	-.1082	-.0705	-.0693	-.1568	-.1648	-.2082	-.2456	-.2706	-.3043	
5	.9183	.9237	.9341	.8827	.8653	.4525	.1499	.0872	.0319	-.1761	-.2763	-.2917	-.2928	-.3026	-.2858	-.2878	
6	1.4157	1.6564	1.5901	1.0184	.6018	.4055	.0551	-.0447	-.0551	-.1687	-.1688	-.2639	-.2824	-.3116	-.2613	-.2474	
7	1.3120	1.6504	1.5849	1.0117	.5954	.3862	.0433	-.1427	-.1453	-.1281	-.1916	-.2330	-.2631	-.2615	-.2067	-.2178	
8	-.2628	-.2270	-.1502	-.0627	.0884	.1786	.1252	.2079	.1985	.4983	.6709	.5913	.3528	.2164	.0328	-.1465	
9	-.2583	-.2361	-.2123	-.2281	-.1180	-.0631	.3541	.3246	.4964	.5899	.8691	1.2293	1.1939	1.1794	.9611	.4870	
10	-.2691	-.2376	-.1954	-.1058	.0135	.4759	.4821	1.0029	.9453	1.3514	1.2293	1.3375	1.3697	1.3112	1.0884	.6458	
11	-.2816	-.2291	-.1779	-.2216	-.0991	-.1934	.0450	.2107	.3312	.8832	1.0721	1.3912	1.4368	1.4583	1.5031	1.1956	
12	.5324	.4653	.2782	.0509	-.0982	-.1743	-.2136	-.1777	-.1133	-.0565	.7596	1.2555	1.3292	1.4130	1.3116	1.2207	
13	-.1269	.0620	.0492	-.0561	-.1327	-.1797	-.1614	-.0953	-.0635	-.1689	-.1624	-.0630	.1047	.2118	.1719	-.1065	
14	-.2573	-.2291	-.1474	-.2698	-.2019	-.1627	.0455	.1930	.2360	.4052	.6468	.9027	1.0633	1.0419	.5039	.0091	
15	-.2622	-.2326	-.1771	-.2438	-.1716	-.0664	.0378	.3116	.3913	.6012	.9102	1.1249	1.1314	1.1061	.9210	1.4227	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	-.2758	-.2284	-.1643	-.3085	-.2754	-.2767	-.1628	.0252	.1346	.4586	.8902	1.3203	1.3791	1.3390	1.2654	1.0987	
18	-.2548	-.2352	-.1512	-.2550	-.1979	-.1994	.0777	.3391	.3548	.6104	1.1310	1.3686	1.3519	1.2268	1.0494	.8658	
19	-.2528	-.2281	-.1489	-.1489	-.1739	-.0785	-.0183	.0614	.1874	.2461	.5333	.9677	1.4075	1.6623	1.6304	.9924	.2380
20	-.2555	-.2206	-.1598	-.1641	-.0460	.1033	.1695	.2726	.3509	.5843	1.0809	1.5533	1.6574	1.6125	1.3832	.7256	
21	-.2693	-.2250	-.1766	-.2443	-.2210	-.1645	.0433	.2888	.3041	.1075	.3444	1.2685	1.6087	1.6568	1.4919	1.0532	
22	-.2704	-.2108	-.1578	-.2874	-.2334	-.1541	.0075	.1130	.1619	.4759	.9750	1.3293	1.5581	1.6409	1.6264	1.3751	
23	-.2822	-.2293	-.1413	-.1670	-.0661	.0091	.2305	.4108	.3782	.6159	1.4043	1.4919	1.6168	1.6544	1.5186	.8836	
24	-.2123	-.1976	-.0936	-.2050	-.1043	-.1729	-.1003	.0063	.0364	.1059	.3075	.6914	.9141	.9990	.9517	.6468	
25-40	.9686	1.4568	1.5829	1.1789	.5985	.5684	.1058	.9658	.1245	1.4392	1.6856	1.6743	1.3606	1.2823	1.0836	.6056	
26-41	.4333	.8135	1.0086	.9312	.6745	.4696	.2179	.3328	.1120	1.3653	1.6136	1.7148	1.3988	1.3070	1.0815	.6084	
27-42	-.0869	.1200	.3094	.6114	.5569	.4837	.3565	.2436	.2310	.7122	1.3877	1.6902	1.4133	1.3084	1.0705	.6546	
28-43	-.1416	-.0903	.2586	.5175	.5502	.5809	.6333	.0179	.9827	-.1693	-.2001	-.2730	-.3050	-.3161	-.2968	-.3204	
29-44	.4987	.8064	.9216	.8494	.6182	.4690	.1751	.6625	-.0193	1.0713	1.4384	1.7114	1.5626	1.4906	1.2542	.5142	
30-45	1.5073	1.6610	1.5075	.3710	.4491	.0895	-.1147	1.0568	-.1324	1.3799	1.4671	1.3506	1.2352	1.2024	1.0329	.7943	
31-46	1.1835	1.4359	1.2585	.3240	.2570	.0625	-.0684	1.2571	-.0587	1.6172	1.6935	1.6467	1.5419	1.5125	1.3059	.9772	
32-47	.4756	.7551	.6685	.2080	.1362	.0514	-.1128	0	-.1108	0	0	0	0	0	0	0	
33-48	-.0341	.0969	.0876	.0657	.1103	.0611	-.0137	.8853	-.0089	1.4378	1.8036	1.7185	1.6409	1.5917	1.2954	.4579	
34-49	-.2065	-.1095	.0762	-.0182	.0125	.0518	.1011	.8107	-.0276	1.4345	1.7863	1.7384	1.6654	1.5989	1.3204	.1243	
35-50	.5692	.6383	.6318	.4089	.1783	.0130	-.1221	.7711	-.0747	.6393	1.0483	1.4535	1.5702	1.6316	1.5506	1.6337	
36-51	-.2577	-.2340	-.2034	-.1332	-.0655	-.0522	.1570	-.2348	.4551	-.2952	-.2910	-.2843	-.3179	-.3248	-.3096	-.3135	
37-52	1.5058	1.1641	.9922	.6079	.3333	.1767	-.0290	.6098	-.0784	.7622	1.3650	1.5521	1.5846	1.5809	1.4326	1.4523	
38-53	.5758	.4937	.4801	.3563	.2212	.1236	-.0889	.4960	-.1663	.6952	1.1026	1.3935	1.5930	1.6486	1.6833	1.6478	
39-54	-.0962	-.0585	-.0026	.0944	.1331	.0865	-.0421	.3719	-.1107	.7985	1.2151	1.4452	1.5924	1.6819	1.6770	1.6345	

TABLE XIII. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 0.70$ AND WITH THE CANARD DEPLOYMENT ANGLE = 115°

Orifice number	Pressure coefficient, C_p									
	$\alpha = -99.2^\circ$	$\alpha = -78.4^\circ$	$\alpha = -19.4^\circ$	$\alpha = -1.16^\circ$	$\alpha = 1.59^\circ$	$\alpha = 19.7^\circ$	$\alpha = 20.3^\circ$	$\alpha = 38.9^\circ$	$\alpha = 78.4^\circ$	$\alpha = 99.5^\circ$
1	-0.5252	-0.7777	0.8881	1.1550	1.1178	0.8737	0.8868	0.1635	-0.1055	-0.0237
2	-.2433	1.0377	.6205	.4632	.4640	.5261	.5456	.4798	-.0032	-.2395
3	0	0	0	0	0	0	0	0	0	0
4	.9681	1.1301	-.1817	-.5353	-.4367	-.3579	-.3303	.1080	-.2773	-.0920
5	1.1051	1.0835	.0052	-.1579	-.1981	-.5528	-.5616	-.5356	-.3624	-.4235
6	1.1183	1.0826	.0502	-.0140	-.0185	-.6424	-.6417	-.5762	-.4149	-.4229
7	1.1218	1.0427	.0906	.0471	.0553	-.4970	-.5074	-.6028	-.4101	-.4058
8	-.4509	-.8360	-.2473	.1409	.1914	.3367	.3477	.3493	-.4327	-1.5309
9	-.4893	-.6681	-.1841	.3476	.4741	.6115	.6494	.6748	.4390	.0619
10	-.4590	-.7240	.2811	.1623	.2221	.2992	.3119	.5879	.4933	.1987
11	-.3715	-.4405	-.3137	-.1803	-.1639	.1590	.1619	.4998	.6420	.6590
12	-.3383	-.3933	-.4887	-.3763	-.3719	-.3843	-.3796	.2471	.5806	.4218
13	-1.4550	-1.2539	-.2742	-.1553	-.1177	-.5739	-.5699	-.4973	-1.0082	-1.3752
14	-.4545	-.6912	-.2098	.1723	.2178	.4060	.4161	.4708	.2632	.5475
15	-.4571	-.6264	-.0177	.3252	.3572	.5333	.5396	.5874	.3287	.0045
16	0	0	0	0	0	0	0	0	0	0
17	-.3852	-.4430	-.5951	-.3402	-.3230	.0604	.0666	.4686	.5725	.4077
18	-.3784	-.4770	-.3685	-.0827	-.0970	.1912	.2065	.6345	.3678	.0903
19	-.4714	-.8070	-.1386	.1435	.2016	.4791	.4990	.8626	1.0684	.2671
20	-.4466	-.5177	.0970	.2630	.3018	.5947	.6126	.9136	1.0742	.7624
21	-.4370	-.4585	-.8998	-.6127	-.5929	-.2520	-.2231	.4616	1.1150	.8875
22	-.3739	-.4303	-.4275	-.1458	-.1045	.1554	.1754	.5784	1.1142	1.0666
23	-.3611	-.4733	.0727	.1572	.2494	.5740	.5989	.8408	1.1219	.9140
24	-.4627	-.4430	-.1733	-.0758	-.0588	-.2182	-.2181	-.0351	.1286	.0180
25-40	1.0073	1.1396	.1824	.7444	-.8791	1.0452	1.0587	.9835	.5996	.2240
26-41	.5206	.9141	.0987	.6311	-.9122	.9822	1.0181	1.0476	.6785	.3188
27-42	-.4522	.1397	.2607	.5806	-.6119	.9462	.9726	1.0600	.7186	.3835
28-43	-.4459	-.4272	.2179	-.5730	.5333	-.7722	-.7933	-.6457	-.4699	-.4928
29-44	.5706	.8514	-.0085	.5570	-.7599	.8369	.8721	1.0392	.9093	.5367
30-45	1.0082	.9099	-.5932	.5308	-.8405	.6342	.6277	.7017	.5502	.3369
31-46	1.0847	.9160	-.8896	.6851	-.3162	.8575	.8838	1.0222	.9212	.6983
32-47	.5734	.5494	-.1700	0	-.20154	0	0	0	0	0
33-48	-.4025	-.3258	-.10961	.8069	-.15820	.9707	.9841	1.1071	.9941	.3997
34-49	-.5415	-.5492	-.3925	.6560	-.11867	.8867	.9050	1.0281	.8975	.5113
35-50	.4143	.5033	-.1520	-.2321	-.8055	.3471	.3642	.8050	1.0773	1.0227
36-51	-.3742	-.4326	-.2949	-.4897	.1516	-.7140	-.7106	-.6976	-.4147	-.4349
37-52	.7519	.4623	-.1728	-.0017	-.3775	.4479	.4848	.8269	.9730	.8132
38-53	.1929	.2043	-.2039	-.0545	-.7704	.2116	.2059	.6258	1.1205	1.1472
39-54	-.6506	-.4218	-.1752	-.0626	-.9532	.3104	.3350	.7319	1.1381	1.1277

TABLE XIV. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.10$ AND WITH THE CANARD DEPLOYMENT ANGLE = 115°

Orifice number	Pressure coefficient, C_p								
	$\alpha = -99.0^\circ$	$\alpha = -79.1^\circ$	$\alpha = -19.5^\circ$	$\alpha = -1.16^\circ$	$\alpha = 1.62^\circ$	$\alpha = 19.7^\circ$	$\alpha = 38.9^\circ$	$\alpha = 78.4^\circ$	$\alpha = 99.4^\circ$
1	-0.4694	-0.5753	1.1559	1.3283	1.3118	1.1530	0.6858	0.2611	0.1094
2	-.3151	1.2664	.8485	.7056	.7252	.7969	.5977	.1229	-.1297
3	0	0	0	0	0	0	0	0	0
4	1.1252	1.2619	.1606	-.6053	-.5818	-.6909	-.6223	-.6533	-.2291
5	1.2834	1.2494	-.1119	-.3543	-.3527	-.4743	-.7818	-.5020	-.3966
6	1.2776	1.2121	.0685	-.3107	-.3129	-.4390	-.7658	-.4773	-.4531
7	1.2783	1.2239	.1031	-.1400	-.1119	-.3733	-.6923	-.5082	-.4804
8	-.4555	-.6034	.0015	.4122	.4437	.6191	.6228	-.1617	-.6476
9	-.5478	-.7366	.1475	.4575	.6718	.8658	.9438	.5955	.3072
10	-.5039	-.6524	.6813	.5571	.5130	.6479	.8666	.6163	.3530
11	-.4331	-.6466	-.3455	-.0061	.0540	.4455	.7864	.7975	.8240
12	-.4289	-.5995	-.6146	-.5276	-.4806	-.2156	.5551	.7751	.6180
13	-.6731	-.7786	-.5700	-.3585	-.1893	-.7756	-.5689	-.5207	-.7463
14	-.4673	-.6057	.0321	.4172	.4537	.6608	.7425	.4962	-.1547
15	-.4635	-.7294	.2341	.5860	.6072	.8055	.8300	.5095	.2919
16	0	0	0	0	0	0	0	0	0
17	-.4249	-.6281	-.6020	-.2618	-.1796	.3497	.7549	.7192	.6322
18	-.4289	-.6049	-.3751	-.0600	.0174	.4757	.9114	.5526	.3342
19	-.4924	-.5911	.1004	.3948	.4425	.7401	1.0776	1.1835	.4225
20	-.4447	-.6807	.3847	.5183	.5712	.8511	1.1476	1.0538	.9063
21	-.4388	-.6288	-.5636	-.5303	-.5226	-.2106	.7154	1.2272	1.0261
22	-.4287	-.5949	-.4871	-.1292	-.0326	.4303	.8327	1.2283	1.2116
23	-.4248	-.5676	-.0029	.2868	.3409	.8177	1.0726	1.2366	.9945
24	-.8430	-.5468	-.2933	-.2532	-.2281	-.1727	.1979	.4560	.4097
25-40	1.1530	0	.4070	.9714	-.3562	1.2288	1.2438	.1204	.3380
26-41	.7536	0	.3398	.8600	-.4047	1.1908	1.2777	.7852	.4863
27-42	-.0411	0	.4825	.8010	-.1053	1.1736	1.2861	.8478	.5218
28-43	-.4681	0	.4404	-.2604	.7298	-.9145	-.8381	-.5432	-.4358
29-44	.8309	0	.2604	.7917	-.3379	1.0760	1.2758	.9945	.6551
30-45	1.1823	0	-.3900	.8101	-.7765	.9211	1.0216	.7175	.5403
31-46	1.2588	0	-.5215	.9299	.5753	1.0899	1.2534	1.0316	.8157
32-47	.8286	0	-.5646	0	-.8883	0	0	0	0
33-48	.0305	0	-.4771	1.0339	-.7970	1.1829	1.3082	1.0939	.5314
34-49	-.4690	0	-.1042	.9087	-.9737	1.1187	1.2497	1.0185	.6327
35-50	.7097	0	-.2839	-.1768	-.8531	.5474	1.0445	.5794	1.1010
36-51	-.4259	0	-.0021	-.9074	.2168	-.9031	-.8435	-.5140	-.4324
37-52	.9970	0	-.0550	.0305	-.7643	.6894	1.0735	1.1057	.9568
38-53	.5315	0	-.1430	.0673	-.9618	.5093	.8838	1.2177	1.2760
39-54	-.2455	0	-.1646	.0842	-.9981	.5786	.9810	1.2706	1.2943

TABLE XV. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 1.50$ AND WITH THE CANARD DEPLOYMENT ANGLE = 115°

Orifice number	Pressure coefficient, C_p															
	$\alpha = -118.9^\circ$	$\alpha = -92.9^\circ$	$\alpha = -78.4^\circ$	$\alpha = -38.9^\circ$	$\alpha = -27.9^\circ$	$\alpha = -12.9^\circ$	$\alpha = -1.69^\circ$	$\alpha = 1.62^\circ$	$\alpha = 13.8^\circ$	$\alpha = 29.9^\circ$	$\alpha = 38.9^\circ$	$\alpha = 53.4^\circ$	$\alpha = 69.4^\circ$	$\alpha = 78.9^\circ$	$\alpha = 94.9^\circ$	$\alpha = 118.9^\circ$
1	-0.3524	0.2149	0.1209	0.8816	1.2025	1.4653	1.4938	1.5054	1.4377	1.1820	0.9105	0.6424	0.7254	0.6827	0.4338	-0.0049
2	1.2634	.4731	1.4517	1.2554	1.0924	.8704	.5300	.6176	.4895	.3525	.5713	.5680	.5924	.5339	.2465	.0263
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1.0211	1.4337	1.5007	.6330	.5119	-.2415	-.1120	-.1405	-.2138	-.2128	-.2145	-.2310	-.4315	-.4774	-.4556	
5	.6898	.6628	.6613	.6700	.3891	-.0942	.1286	.0506	-.2570	-.4993	-.5579	-.4945	-.4591	-.4272	-.4379	-.4627
6	1.3831	1.5102	1.4292	.6990	.3102	-.1233	-.3151	-.2959	-.3239	-.4752	-.5008	-.4052	-.4270	-.4249	-.4313	-.4407
7	1.3146	1.5037	1.4289	.6750	.3812	-.0283	-.0918	-.1461	-.1906	-.3674	-.4582	-.3824	-.4105	-.4296	-.3727	-.3511
8	-.3800	.2043	.0763	-.1821	-.0503	.2229	.2193	.2148	.4887	.4731	.7619	.6887	.3311	.0239	-.1714	-.4682
9	-.3759	.1553	.0774	-.3388	-.2279	.3272	.5557	.6139	.7920	1.0442	1.0594	1.0399	.9187	.9294	.6313	.2199
10	-.3703	.2113	.0514	.6313	1.0785	1.0336	.9657	.9542	.7922	.9607	1.0544	1.0840	1.1497	.9332	.7007	.3519
11	-.4107	.2077	.0869	.4058	-.3494	-.2449	.0079	.1582	.4716	.8270	.9654	.9823	1.1102	1.1250	1.1719	.8916
12	.1824	.2203	.0915	-.3867	-.3810	-.3520	-.3256	-.3301	-.0344	.5249	.7528	.8824	1.0905	1.1065	.9530	.7750
13	-.1167	-.1153	-.1914	-.3790	-.4282	-.4110	-.1980	-.1204	-.3149	.2789	-.1819	-.1265	.0224	.0490	-.2091	-.3652
14	-.3781	.2006	.0651	-.3527	-.2200	.0662	.2257	.2546	.4914	.5708	.7752	.9005	.9193	.8621	.3014	-.4472
15	-.3837	.1963	.0731	-.3718	-.0526	.2329	.4941	.5229	.7409	.9013	.9525	.9806	.9314	.8652	.6652	.1486
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	-.4107	.2332	.0973	-.5113	-.4632	-.2927	-.1057	-.0012	.3510	.7771	.9372	1.1093	1.1025	1.0357	.9242	.6850
18	1.2877	.6061	.0993	-.3132	1.0455	-.0038	.1453	.1686	.5027	.9336	1.1098	1.1764	.9984	.9016	.7092	.3512
19	-.3596	.1996	.0515	-.1310	.0705	.0786	.2097	.2688	.5542	.8120	1.1031	1.3729	1.5169	1.4853	.8600	-.2344
20	-.3613	.2342	.0765	-.1101	.1085	.3249	.4447	.4972	.7392	1.1238	1.2826	1.4473	1.5205	1.4745	1.2371	.6056
21	-.3957	.2363	.1063	-.3147	-.2433	-.0469	.1517	.2189	-.0106	.2284	.8007	1.1804	1.4777	1.5200	1.3316	.7893
22	-.3943	.2370	.1107	-.4249	-.2987	-.1586	.0127	.0569	.4500	.8303	.9693	1.2078	1.4340	1.5115	1.4693	1.1428
23	-.4259	.2441	.1018	-.3452	-.0392	.2135	.3970	.4627	.7981	1.1810	1.2589	1.3659	1.4800	1.5178	1.3214	.5722
24	-.3190	.1389	.0654	-.3884	-.2667	-.1981	-.1243	-.0782	.0141	.3161	.4431	.6059	.7881	.8323	.7614	.5052
25-40	1.0929	1.4403	1.5192	.7794	.5728	.1781	1.1857	-.1194	1.1927	1.1928	1.3545	1.3401	1.1721	1.0482	.8004	.3932
26-41	.6822	1.1545	1.3346	.8509	.5473	.1913	1.0206	-.0970	1.1520	1.2024	1.3899	1.3953	1.2484	1.1114	.8279	.3932
27-42	.0463	.4828	.7833	.8773	.6741	.3989	.9569	.1196	1.1201	1.1385	1.3853	1.4278	1.2958	1.1533	.8446	.4198
28-43	-.3875	.1986	.0460	.4648	.5724	.5296	-.0109	.8175	-.3805	-.4949	-.5626	-.4275	-.4505	-.4841	-.4389	-.4700
29-44	.8234	1.1705	1.2695	.7711	.4258	.1309	.9544	-.0875	1.1007	1.4985	1.4730	1.4697	1.3522	1.2932	1.0099	.2922
30-45	1.2609	1.4218	1.3437	.1212	.0668	-.3283	.9005	-.3856	1.1308	1.2898	1.2676	1.2250	1.0707	1.0609	.8669	.5008
31-46	1.3176	1.4838	1.3320	.0039	-.0998	-.2911	1.1521	1.1996	1.2401	1.4762	1.4671	1.4401	1.2878	1.3321	1.1205	.7169
32-47	.8726	1.1172	1.0510	-.0080	-.1125	-.3226	0	-.3547	0	0	0	0	0	0	0	0
33-48	.1993	.4652	.4999	.0105	-.0507	-.2043	1.2356	-.2945	1.3777	1.5434	1.5278	1.5199	1.4170	1.3956	.9076	.2066
34-49	-.1493	.1993	.1429	-.0555	.0336	-.1659	1.1033	-.4280	1.3612	1.4962	1.4877	1.4786	1.4762	1.3344	.9753	.1952
35-50	.7506	.6641	.6832	.3099	-.0154	-.3137	.2035	-.3790	.4425	1.1005	1.2215	1.3500	1.2802	1.4689	1.4062	1.3320
36-51	-.4255	.2364	.1180	-.3637	-.2536	.1978	-.4698	.4958	-.5672	-.5499	-.5535	-.4459	-.4676	-.4531	-.4544	-.5098
37-52	1.4490	1.2042	1.0275	.4729	.1813	-.1005	.3074	-.3430	.6372	1.1972	1.2608	1.3044	1.2724	1.3863	1.2637	1.1196
38-53	.8785	.8463	.7704	.4424	.1934	-.4069	.3709	-.4616	.6763	.9219	1.0709	1.2323	1.4755	1.4995	1.5040	1.4137
39-54	.1089	.2401	.3115	.3476	.0494	-.2806	.3208	-.4267	.7153	1.0454	1.1753	1.3092	1.5143	1.5544	1.4764	1.4016

TABLE XVI. - PRESSURE DISTRIBUTION ON THE LOADS TEST MODEL FOR A SINGLE CANARD AT $M = 2.00$ AND WITH THE CANARD DEPLOYMENT ANGLE = 115°

Orifice number	Pressure coefficient, C_p														
	$\alpha = -38.9^\circ$	$\alpha = -28.1^\circ$	$\alpha = -13.0^\circ$	$\alpha = -1.64^\circ$	$\alpha = 1.64^\circ$	$\alpha = 13.9^\circ$	$\alpha = 29.9^\circ$	$\alpha = 38.9^\circ$	$\alpha = 53.3^\circ$	$\alpha = 69.5^\circ$	$\alpha = 78.8^\circ$	$\alpha = 94.0^\circ$	$\alpha = 110.0^\circ$	$\alpha = 118.9^\circ$	
1	1.0246	1.3396	1.6087	1.6531	1.6517	1.5825	1.2895	1.0670	0.7540	0.8092	0.7476	0.5691	0.3284	0.2494	
2	1.4232	1.2819	1.2324	.2321	.3498	.3743	.4253	.5090	.3269	.5443	.6074	.4215	.2981	.1975	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	.6681	.4184	.0714	.1461	.0837	-.0633	-.1010	-.1005	-.0608	-.0112	-.1880	-.2483	-.2791	-.2677	
5	.7576	.4341	.0846	-.1056	-.0797	-.2559	-.3026	-.3198	-.3078	-.3200	-.2664	-.2792	-.3005	-.2779	
6	.6839	.3805	-.0777	-.1375	-.0882	-.1973	-.2554	-.3047	-.2199	-.2728	-.2778	-.2684	-.2701	-.2670	
7	.6737	.3628	-.0209	-.1382	-.1542	-.1408	-.2219	-.2706	-.2422	-.2510	-.2559	-.2108	-.2259	-.2466	
8	.0440	.1157	.1295	.2047	.1994	.3955	.4787	.6290	.5889	.2781	.1667	.0238	.1314	.1928	
9	-.1092	-.0152	.3281	.3504	.4787	.6168	.6609	.9671	.9141	.9231	1.0009	.7911	.5181	.3207	
10	.7595	1.1907	1.6387	1.4663	1.5470	.8245	1.1118	1.2295	1.2086	1.2554	1.0427	.8368	.5911	.4231	
11	-.1526	-.1198	-.1558	.0702	.1530	.4653	.9261	1.0253	1.0866	1.2120	1.3200	1.2996	1.0868	.9156	
12	-.2114	-.2394	-.2206	-.1911	-.1334	.1614	.7639	1.0431	.9776	1.2070	1.2633	1.0825	1.0597	.7138	
13	-.1418	-.2146	-.2331	-.1107	-.0817	-.1381	.0116	.0532	.0903	.2077	.2564	-.0637	-.1280	-.1416	
14	-.2104	-.1889	.0461	.1980	.2397	.4679	.6703	.6721	.8513	1.0137	1.0020	.4935	-.1256	.0676	
15	-.2401	-.0884	.1575	.3402	.4214	.5661	.7791	.9082	.9608	1.0099	.9784	.8205	.4515	.2910	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	-.2979	-.2630	-.1454	.0225	.1097	.4124	.8094	1.0700	1.2820	1.2239	1.1344	1.0493	.8896	.7518	
18	1.9615	-.1305	1.6521	.2639	.3191	.5587	1.0491	1.2951	1.3455	1.1434	1.0137	.8064	.6593	.5638	
19	-.1025	-.0151	.0632	.1856	.2457	.5609	.9726	1.0734	1.3491	1.6405	1.6439	1.0697	.0897	.2180	
20	-.0825	.0607	.2112	.3407	.4155	.5973	1.0363	1.3478	1.5223	1.6605	1.6194	1.4129	.9359	.7128	
21	-.2038	-.1482	.1263	.2341	.2452	.1801	.3359	.3819	1.1985	1.5940	1.6544	1.5001	1.1043	1.0192	
22	-.2641	-.1573	-.0343	.1048	.1728	.5108	.8885	1.1265	1.3177	1.5463	1.6385	1.6354	1.4352	1.2624	
23	-.1677	.0414	.3049	.3567	.3654	.7989	1.3830	1.5393	1.5088	1.6215	1.6521	1.4665	.8520	.5654	
24	-.2312	-.1627	-.0875	.0212	.0675	.1247	.4003	.6081	.7413	.9052	.9566	.9050	.7563	.6418	
25-40	.4692	.4679	.2899	1.3451	.1561	.8204	.8610	1.2961	1.3736	1.2929	1.1475	.9620	.6651	.5090	
26-41	.7117	.3827	.1022	.7119	.0927	.9596	.9317	1.4029	1.4708	1.3578	1.2165	.9911	.6729	.5294	
27-42	.8107	.5846	.2923	.4130	.0822	1.1083	.9286	1.4492	1.4766	1.4001	1.2641	1.0207	.7225	.5472	
28-43	.3419	.5772	.7678	.0322	1.0090	-.1530	-.2641	-.3088	-.3077	-.2837	-.2890	-.2849	-.2906	-.2906	
29-44	.6135	.3979	.1247	.8613	-.0231	.9612	1.3658	1.4937	1.7486	1.4901	1.3773	1.1578	.7312	.4115	
30-45	.3568	.1909	-.1668	1.3123	-.1668	1.3228	1.5361	1.4458	1.4696	1.2456	1.2008	1.0508	.8043	.7641	
31-46	.2116	.0147	-.1409	1.4498	-.1264	1.3635	1.6357	1.6026	1.6884	1.4040	1.4641	1.2866	1.0338	.8781	
32-47	.1611	.0040	-.1479	0	-.1326	0	0	0	0	0	0	0	0	0	
33-48	.2047	.1018	-.0598	1.1762	-.0748	1.6298	1.9056	1.9372	1.7793	1.5408	1.5477	1.0889	.5871	.3182	
34-49	.1344	.1834	.0111	1.0397	-.1677	1.5194	1.9328	2.0166	1.8026	1.6376	1.5263	1.1547	.5986	.0471	
35-50	.1766	-.0400	-.1679	.8018	-.1238	.4899	1.1106	1.3518	1.5052	1.4107	1.6078	1.5691	1.5949	1.5900	
36-51	-.1282	-.0471	.3333	-.2771	.6442	-.3107	-.3288	-.3302	-.2994	-.2964	-.2919	-.2748	-.3004	-.3157	
37-52	.4116	.1733	-.0365	.6768	-.1264	.7276	1.3045	1.2213	1.4697	1.4342	1.5200	1.4251	1.3578	1.3272	
38-53	.4411	.1244	-.2067	.7006	-.2009	.8533	1.2862	1.3783	1.4338	1.5598	1.6887	1.6884	1.7038	1.5490	
39-54	.2730	.1367	-.1413	.4232	-.1919	.9151	1.3762	1.4570	1.5107	1.6396	1.7164	1.7232	1.6946	1.6249	

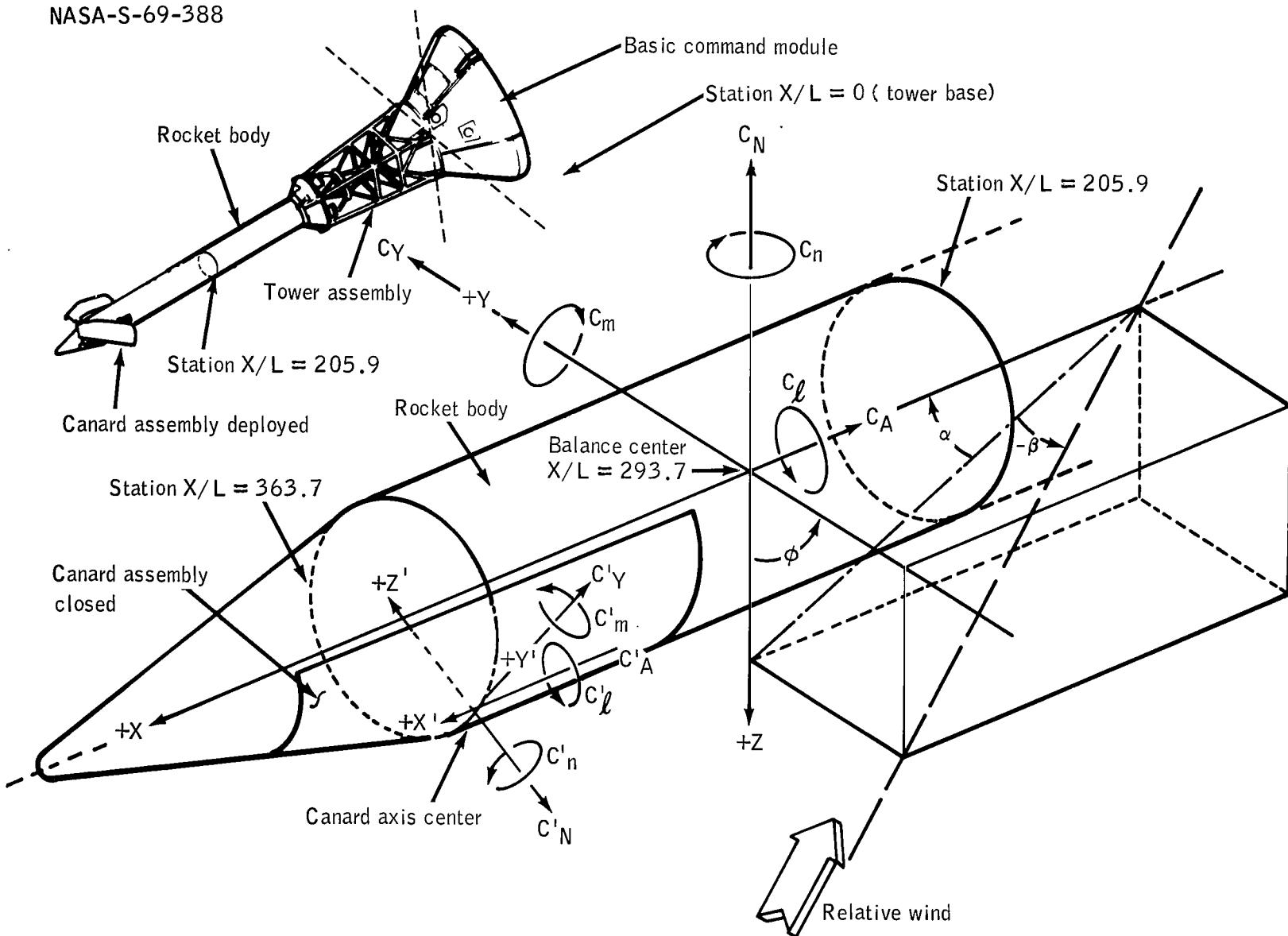
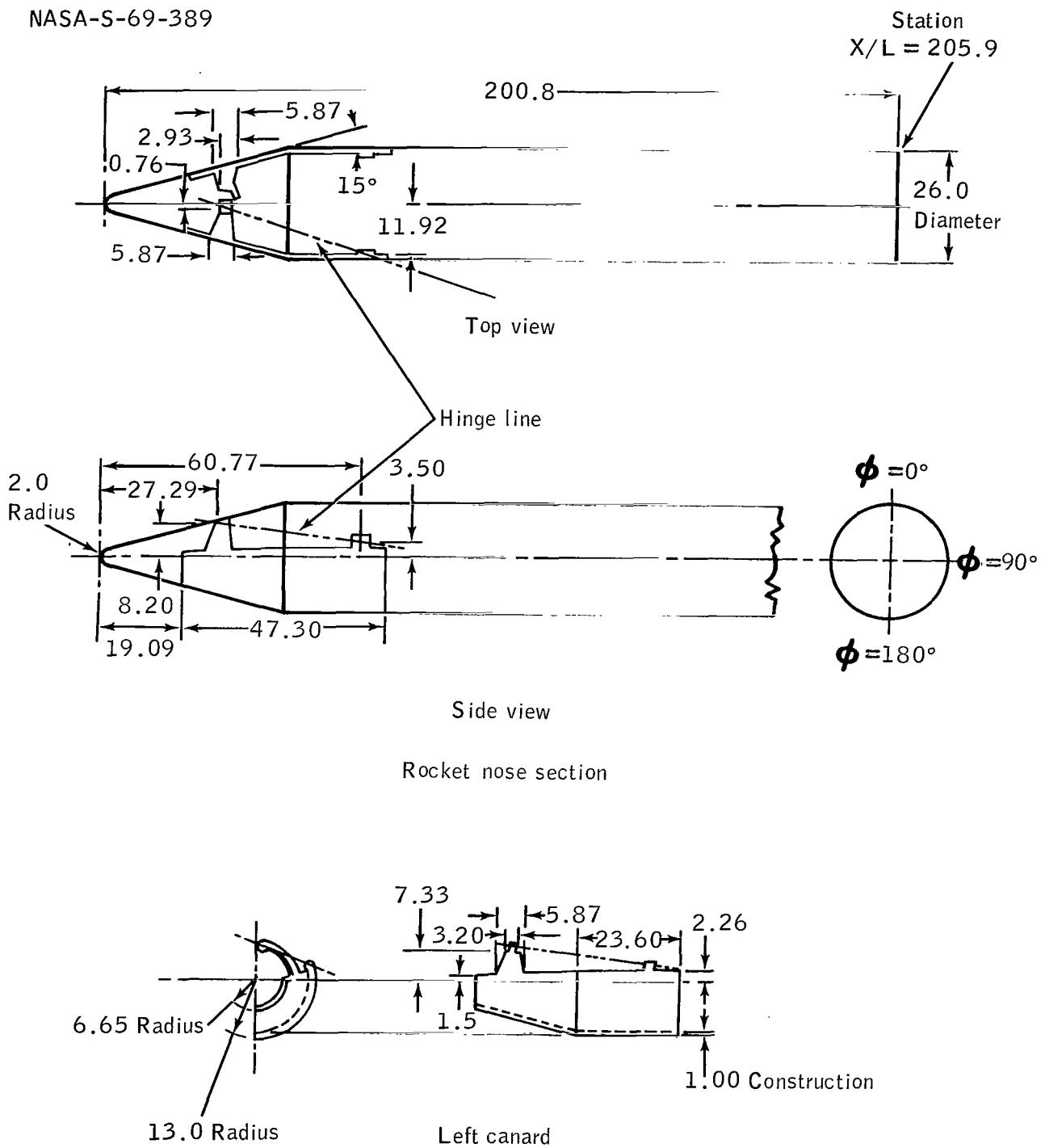


Figure 1. - Axes systems of canard and nose sections for loads test model; sketch not drawn to scale.

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NASA-S-69-387

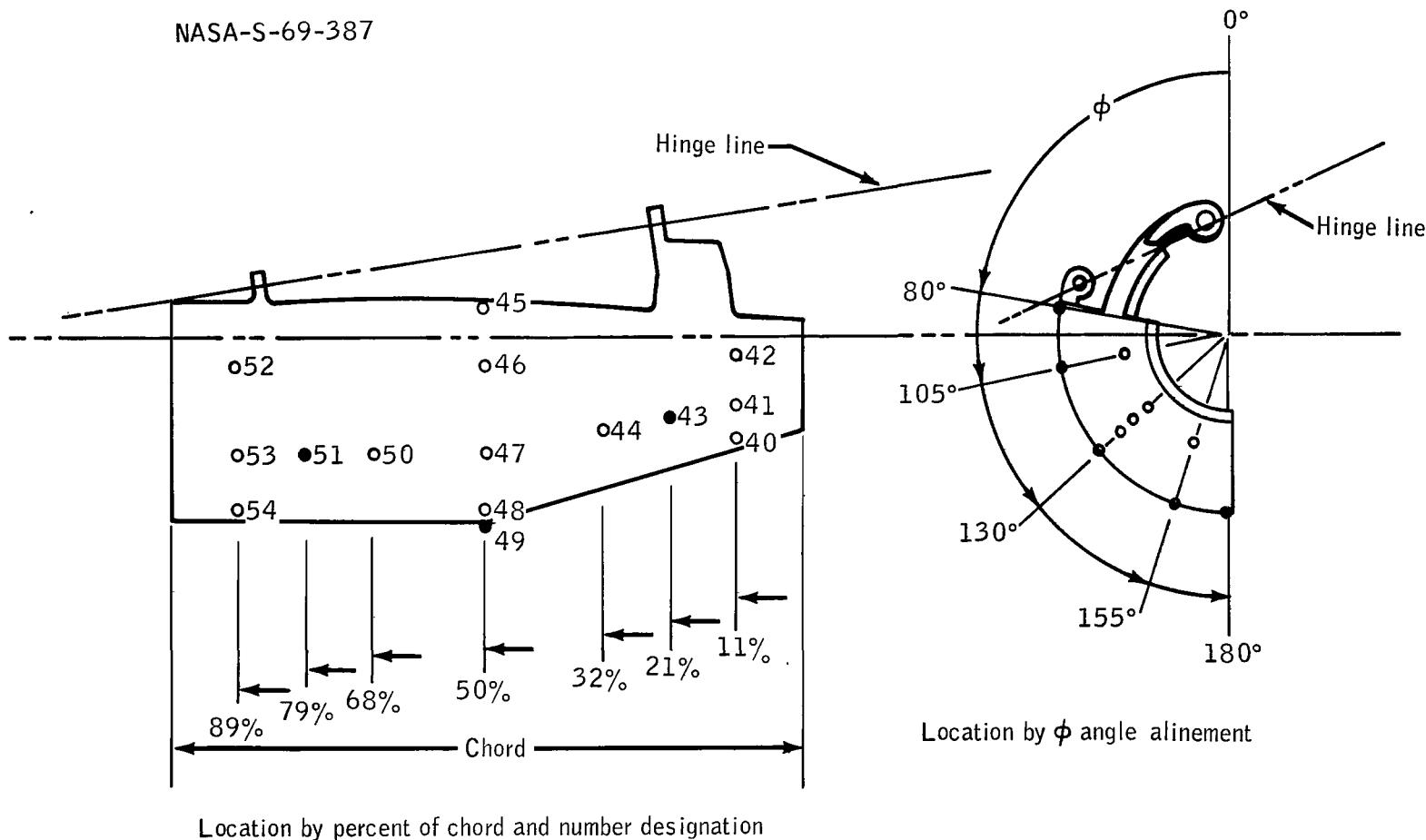
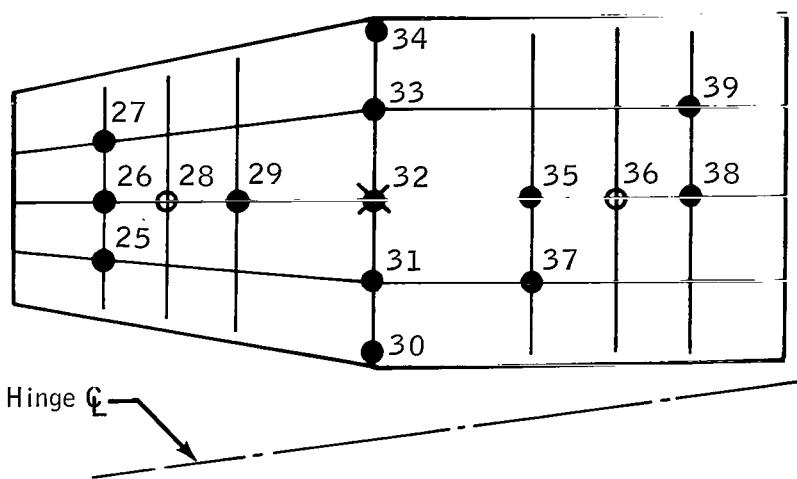


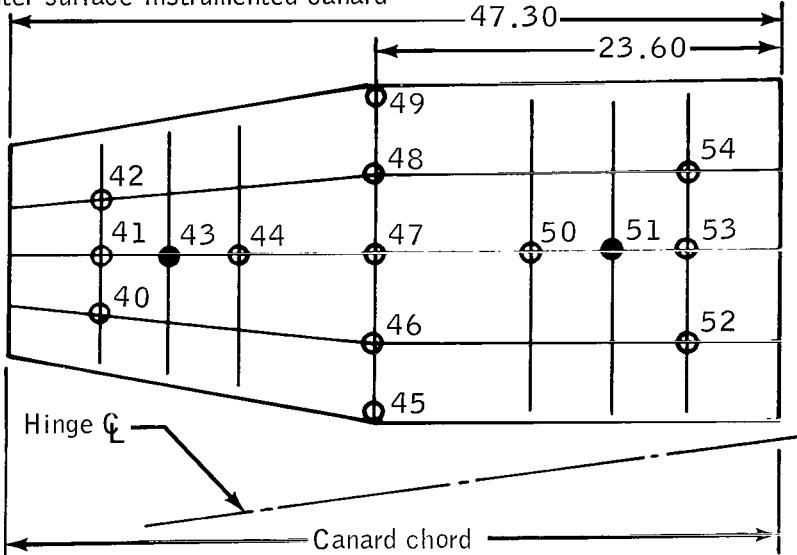
Figure 3. - Location of instrumentation points on outer surface of right-hand canard; numbers 43 and 51 are located on inner surface.

NASA-S-69-391

Inner surface instrumented canard

 $\phi = 180^\circ$ $\phi = 155^\circ$ $\phi = 130^\circ$ $\phi = 105^\circ$ $\phi = 80^\circ$

Outer surface instrumented canard

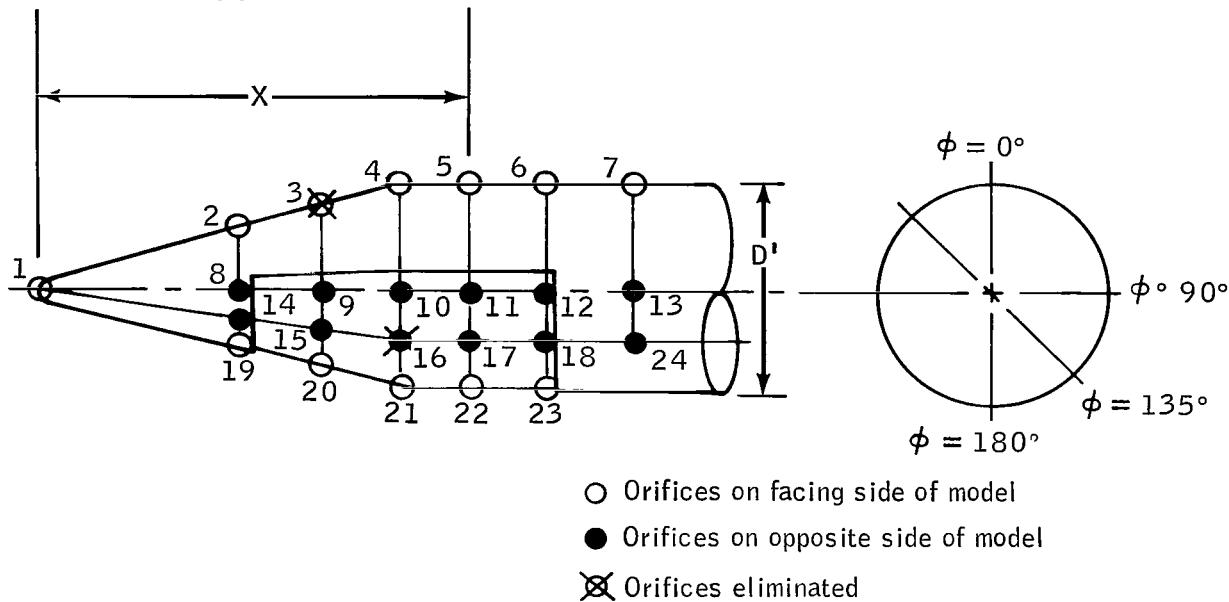


- Orifices on inner canard surface
- Orifices on outer canard surface
- ☒ Orifices eliminated

Chord aft of leading edge, percent	Pressure instrumentation angle, ϕ , deg				
	80	105	130	155	180
	Canard orifice number				
11			26-41	27-42	
21			28-43		
32			29-44		
50	30-45	31-46	32-47	33-48	34-49
68		37	35-50		
79			36-51		
89		52	38-53	39-54	

Figure 4. - Location and designation of right-hand canard pressure orifices.

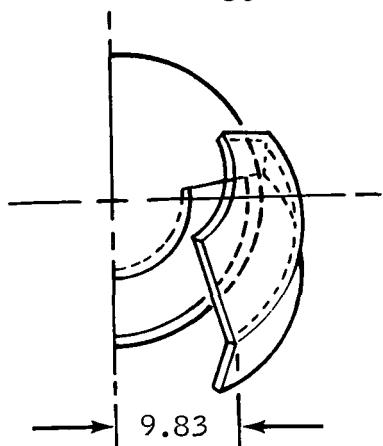
NASA-S-69-390



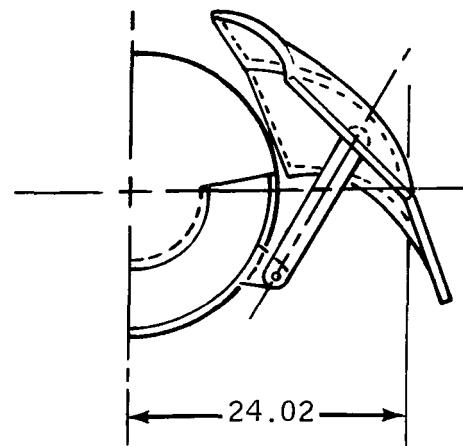
X/D'	Pressure instrumentation angle, ϕ , deg			
	0	90	135	180
Model orifice number				
0	1			
0.761	2	8	14	19
1.180	3	9	15	20
1.646	4	10	16	21
2.092	5	11	17	22
2.539	6	12	18	23
2.986	7	13	24	

Figure 5. - Location and designation of pressure orifices on escape rocket nose section.

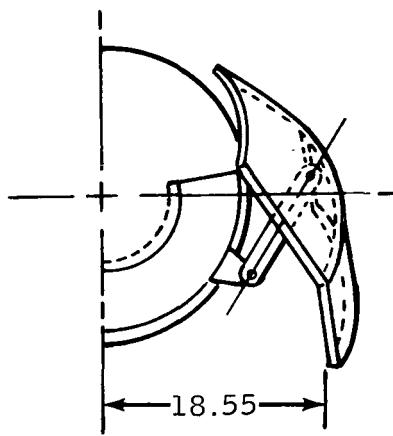
NASA-S-69-386



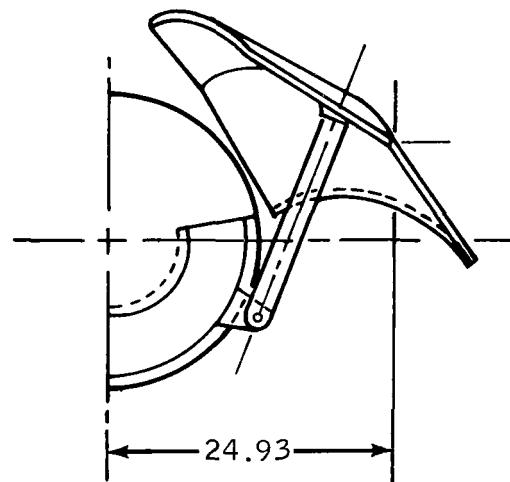
$\delta = 30^\circ$ deployment



$\delta = 90^\circ$ deployment



$\delta = 60^\circ$ deployment



$\delta = 115^\circ$ deployment

Figure 6. - Front view of model (left half) shown at canard deployment angles tested; sketch not drawn to scale; full-scale dimensions given in inches.

NASA-S-69-392

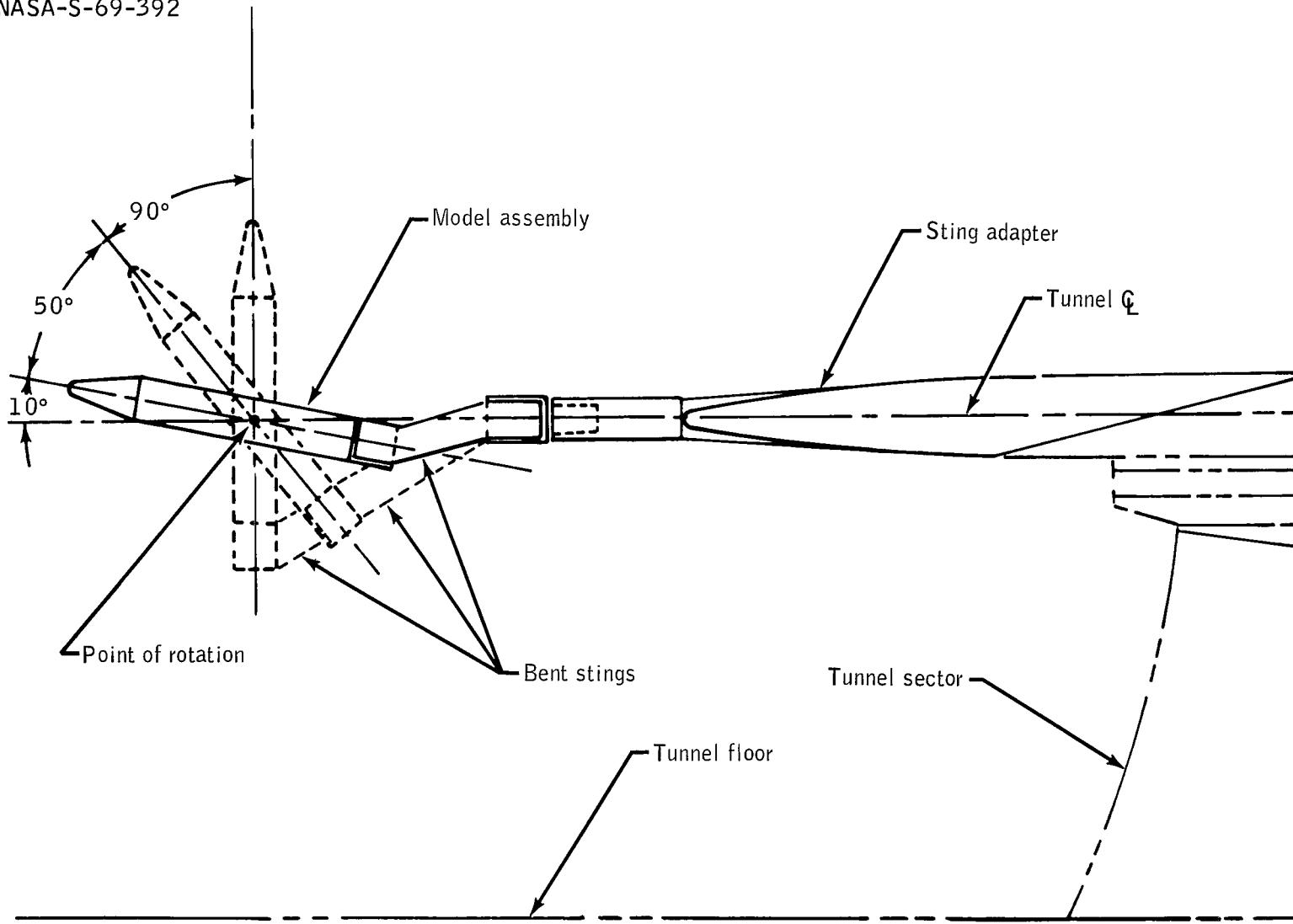
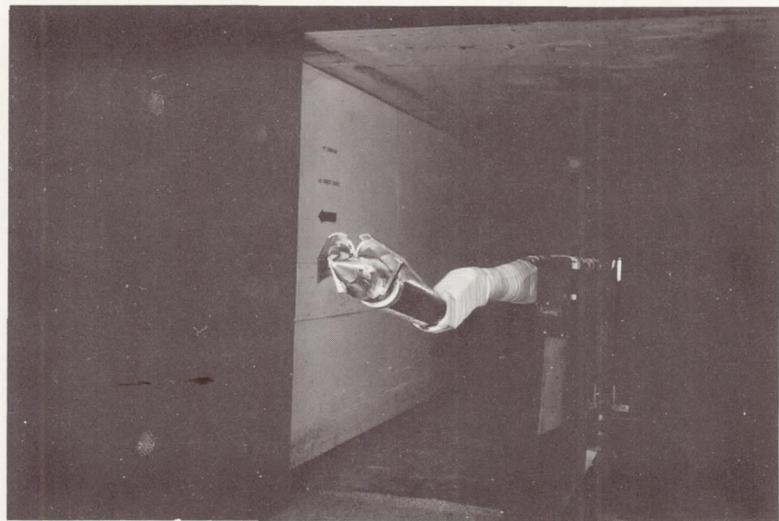
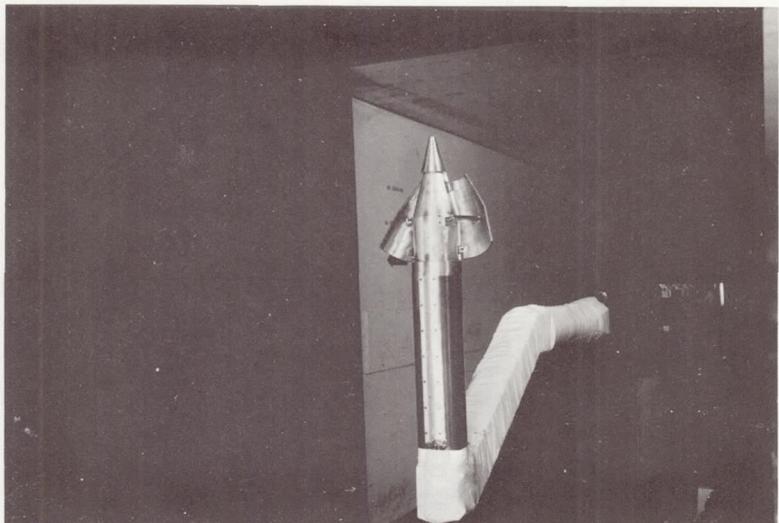


Figure 7. - Typical installation in trisonic wind tunnel; sketch not drawn to scale.

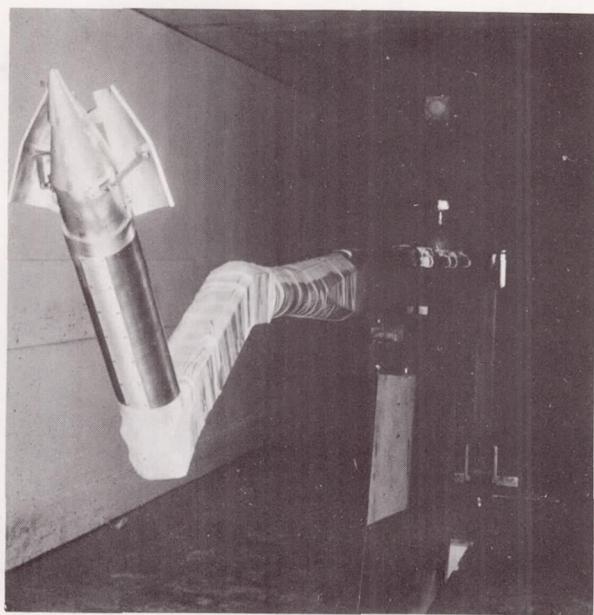


(a) Model mounted on 10° bent sting.

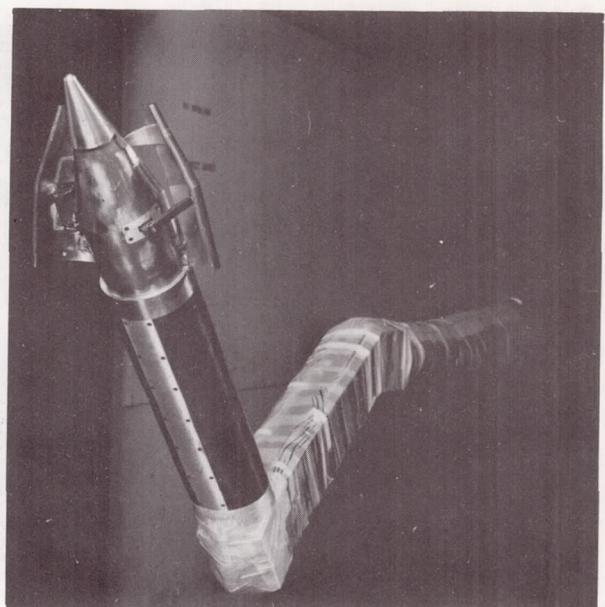


(b) Model mounted on 90° bent sting.

Figure 8. - Loads test model with canards fully deployed at $\delta = 115^\circ$, shown mounted in the trisonic wind tunnel.



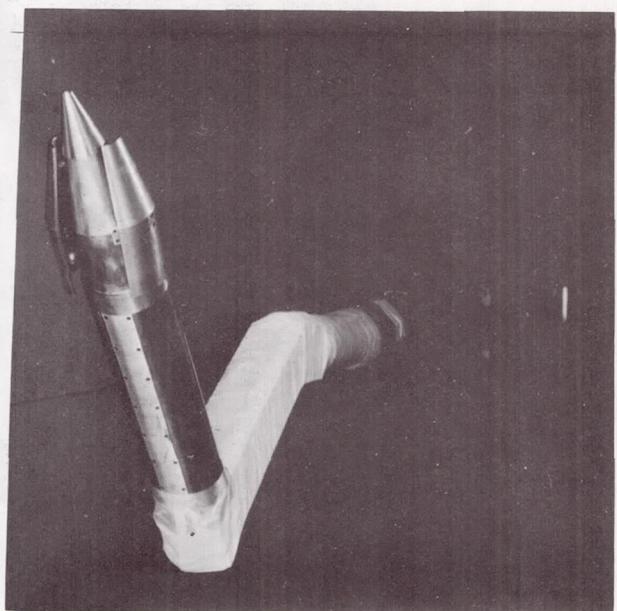
(a) $\delta = 115^\circ$.



(b) $\delta = 90^\circ$.

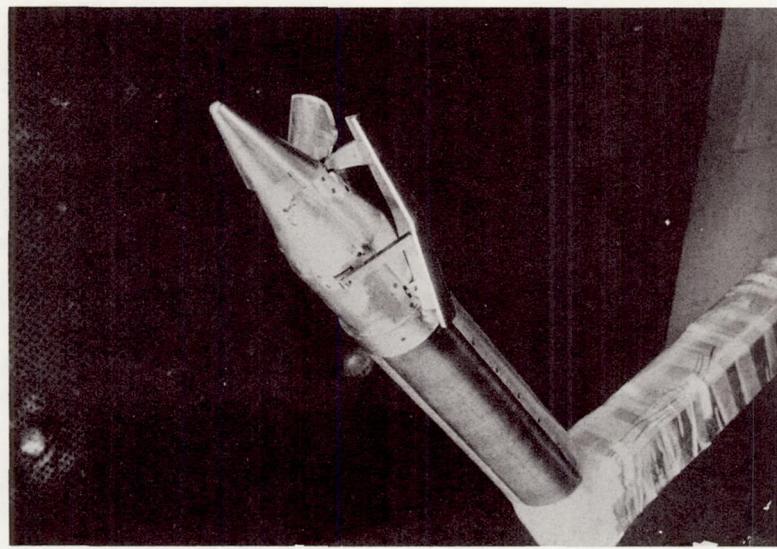


(c) $\delta = 60^\circ$.

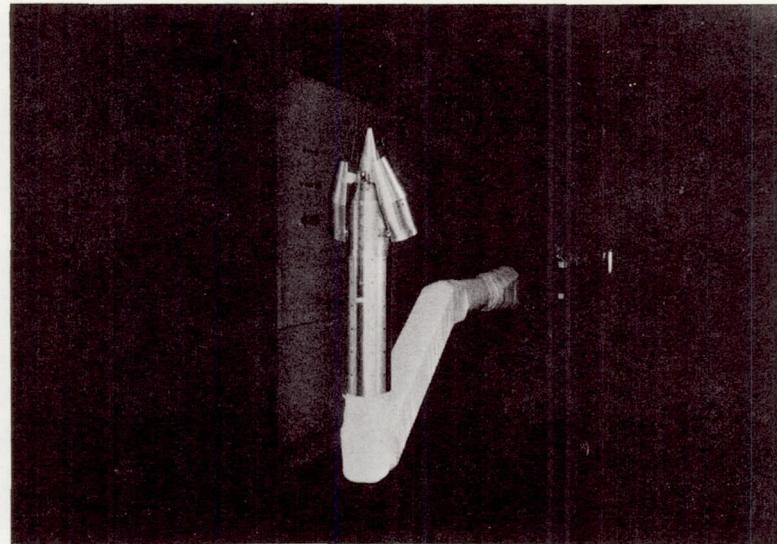


(d) $\delta = 30^\circ$.

Figure 9. - Loads test model on the 50° bent sting in the trisonic wind tunnel, shown at canard deployment angles tested.

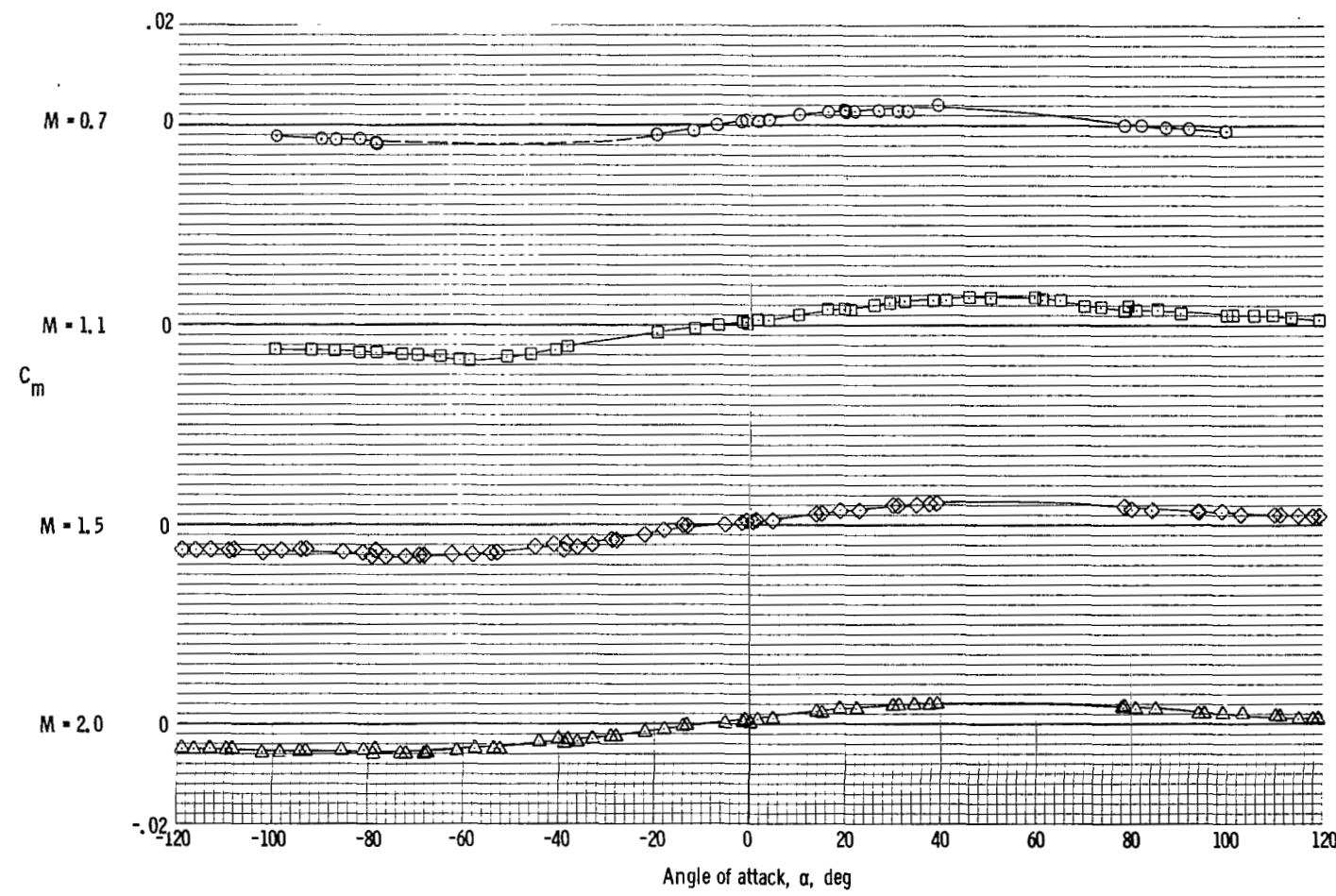


(a) Closeup of model with canards fully deployed; $\delta = 115^\circ$.



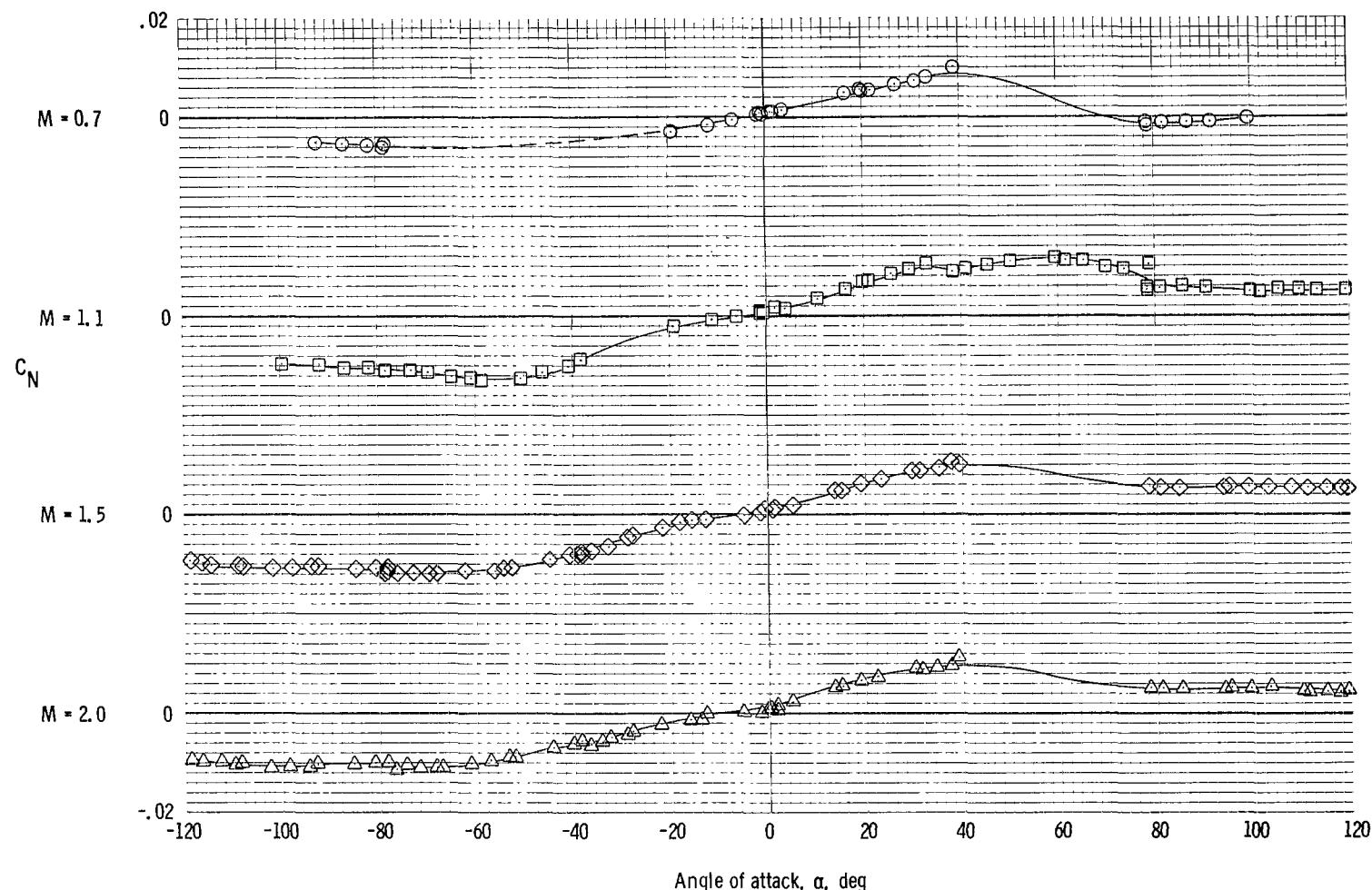
(b) Model rolled 180° to obtain negative angles of attack; $\delta = 90^\circ$.

Figure 10. - Loads test model mounted in the trisonic wind tunnel.



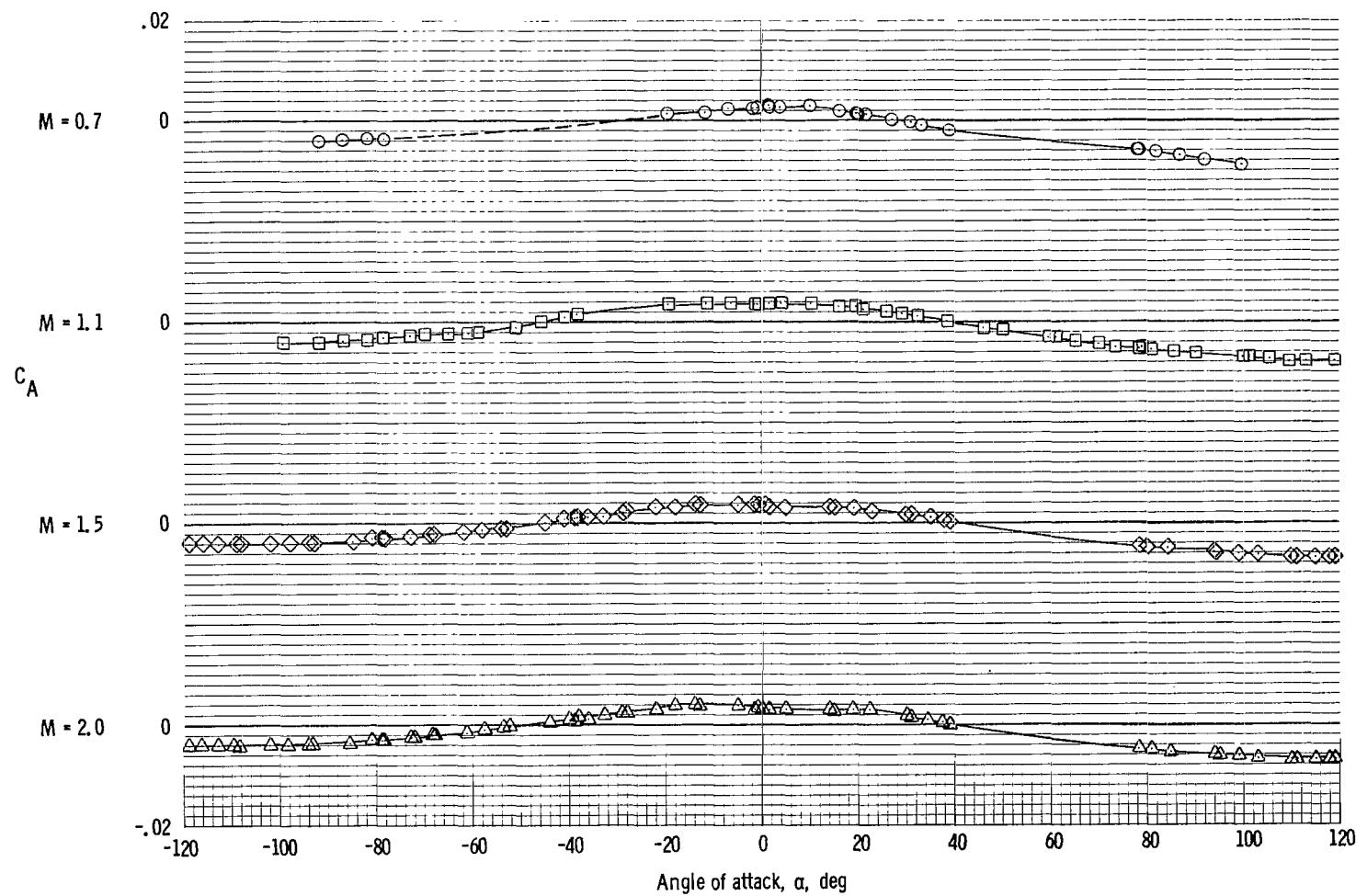
(a) Pitching-moment coefficient at $\delta = 30^\circ$.

Figure 11. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the body axes at $M = 0.7, 1.1, 1.5$, and 2.0 at selected canard deployment angles.



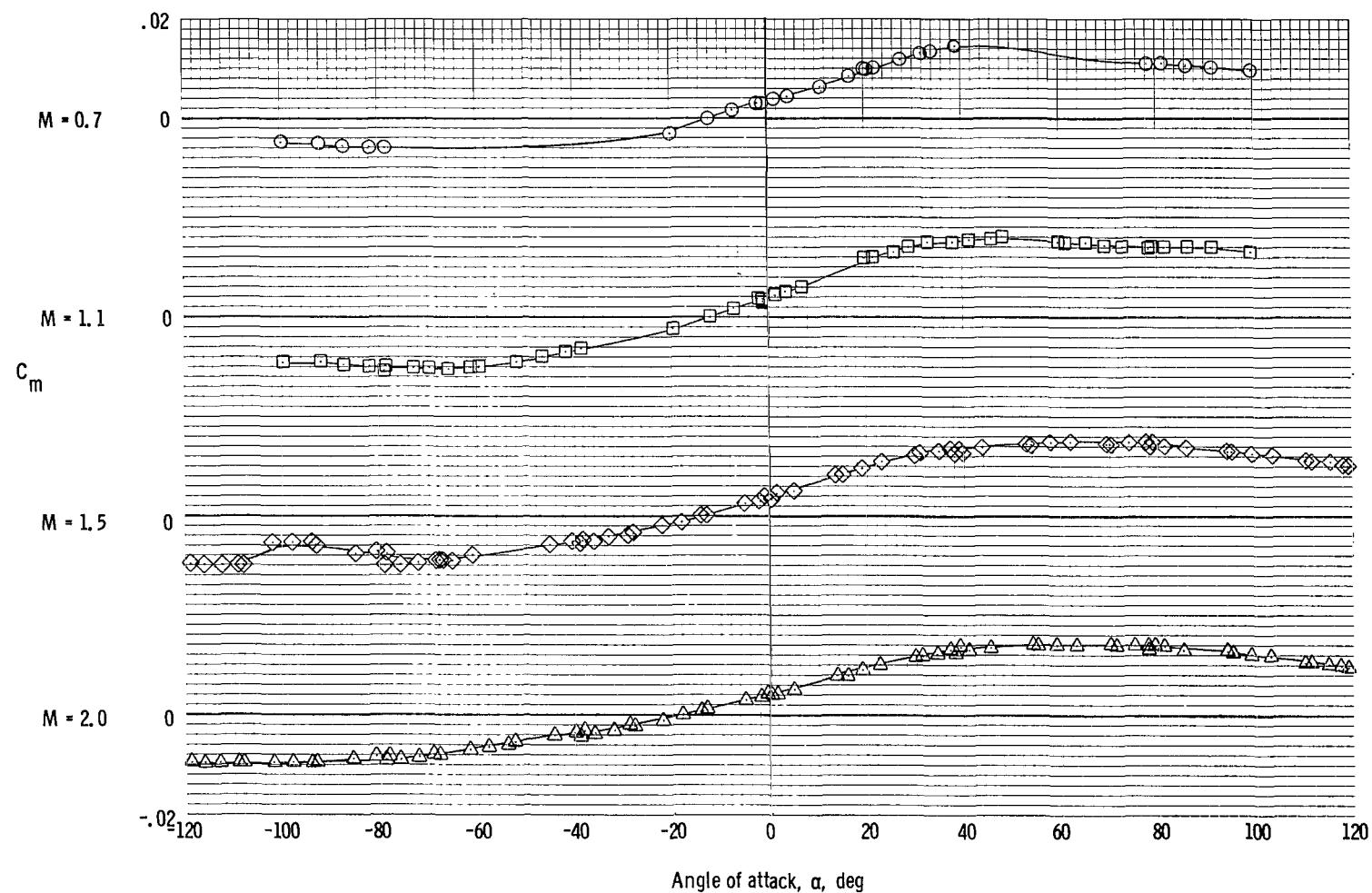
(b) Normal-force coefficient at $\delta = 30^\circ$.

Figure 11. - Continued.



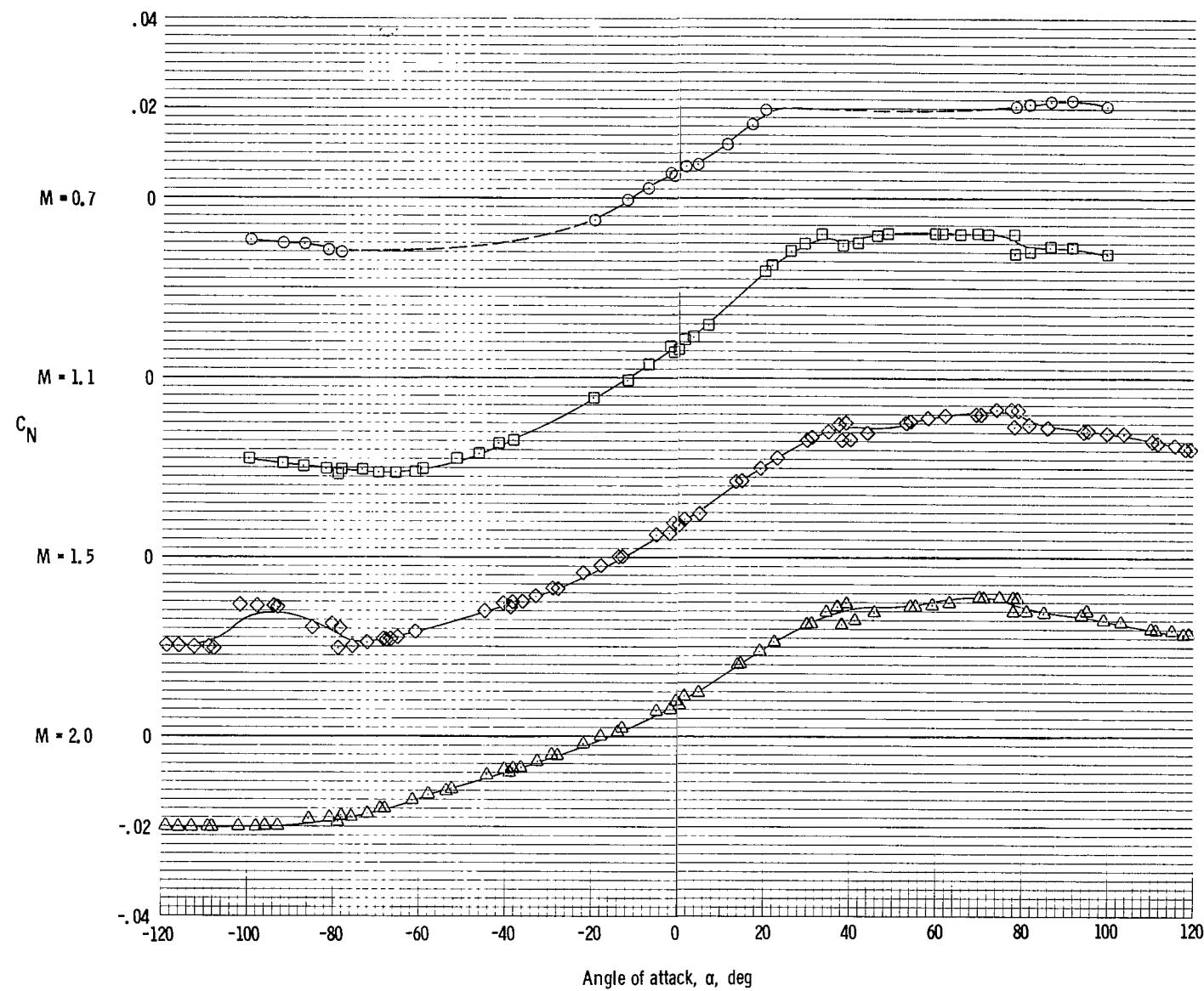
(c) Axial-force coefficient at $\delta = 30^\circ$.

Figure 11. - Continued.



(d) Pitching-moment coefficient at $\delta = 60^\circ$.

Figure 11. - Continued.



(e) Normal-force coefficient at $\delta = 60^\circ$.

Figure 11. - Continued.

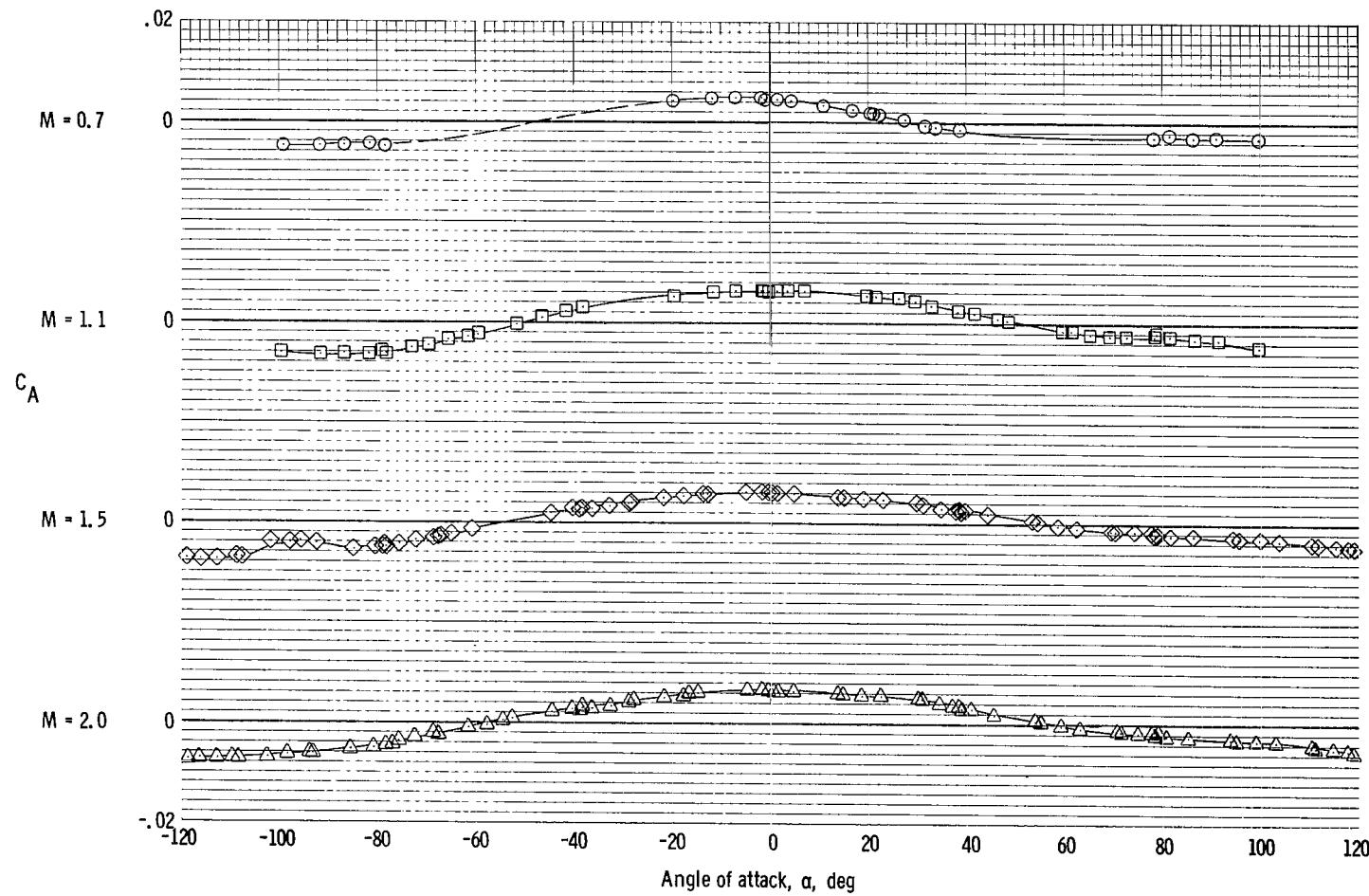
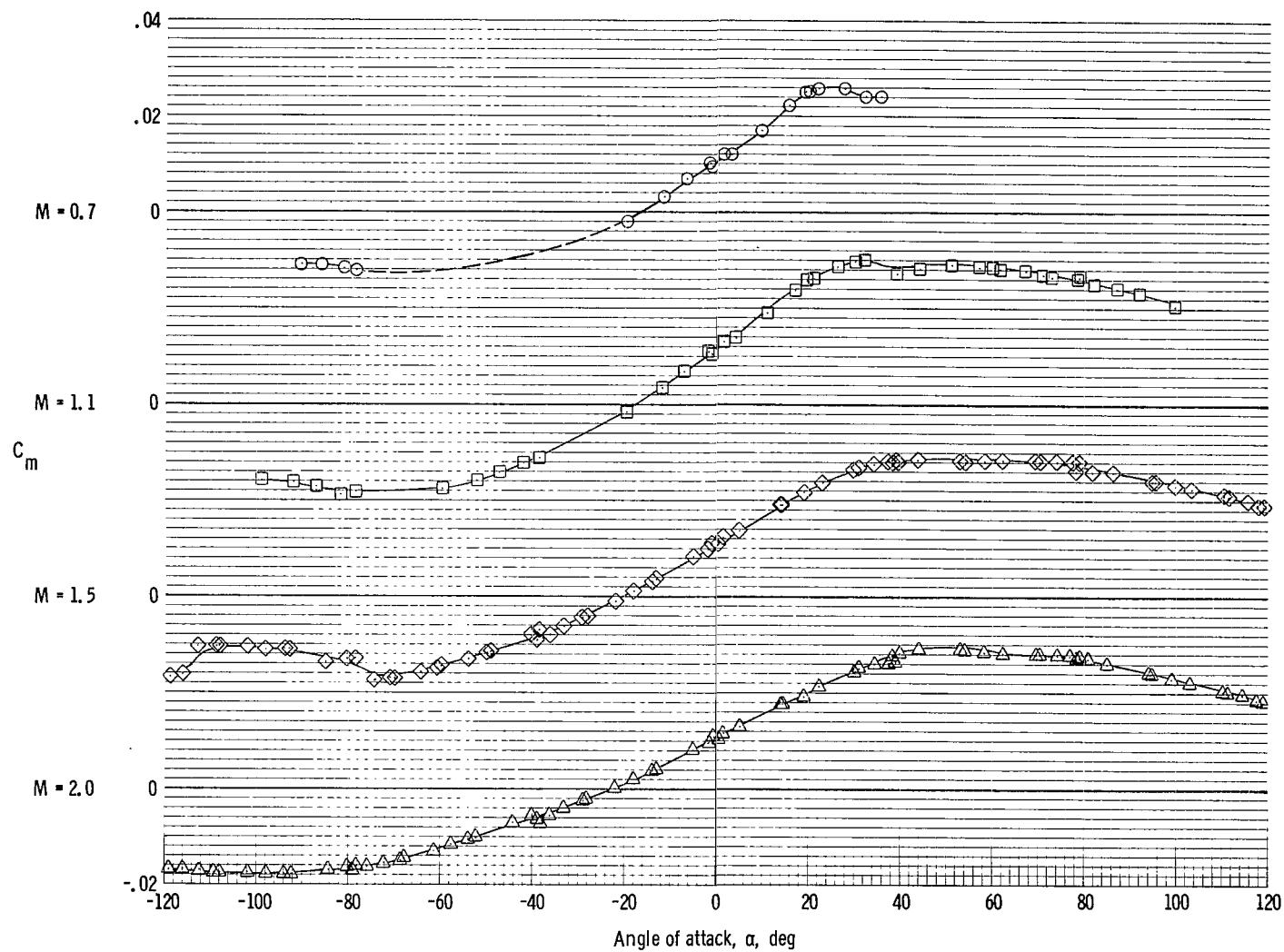
(f) Axial-force coefficient at $\delta = 60^\circ$.

Figure 11. - Continued.



(g) Pitching-moment coefficient at $\delta = 90^\circ$.

Figure 11. - Continued.

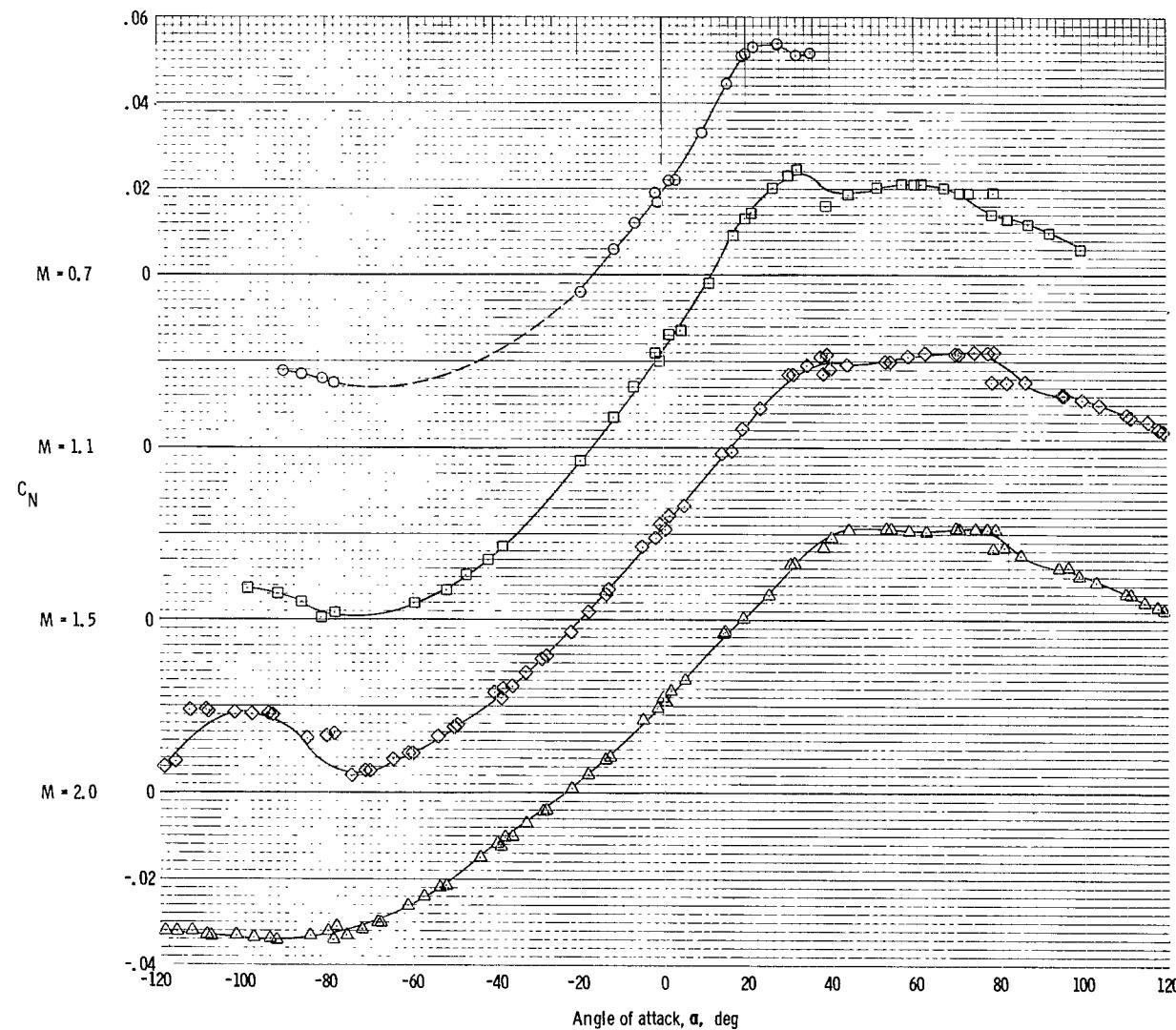
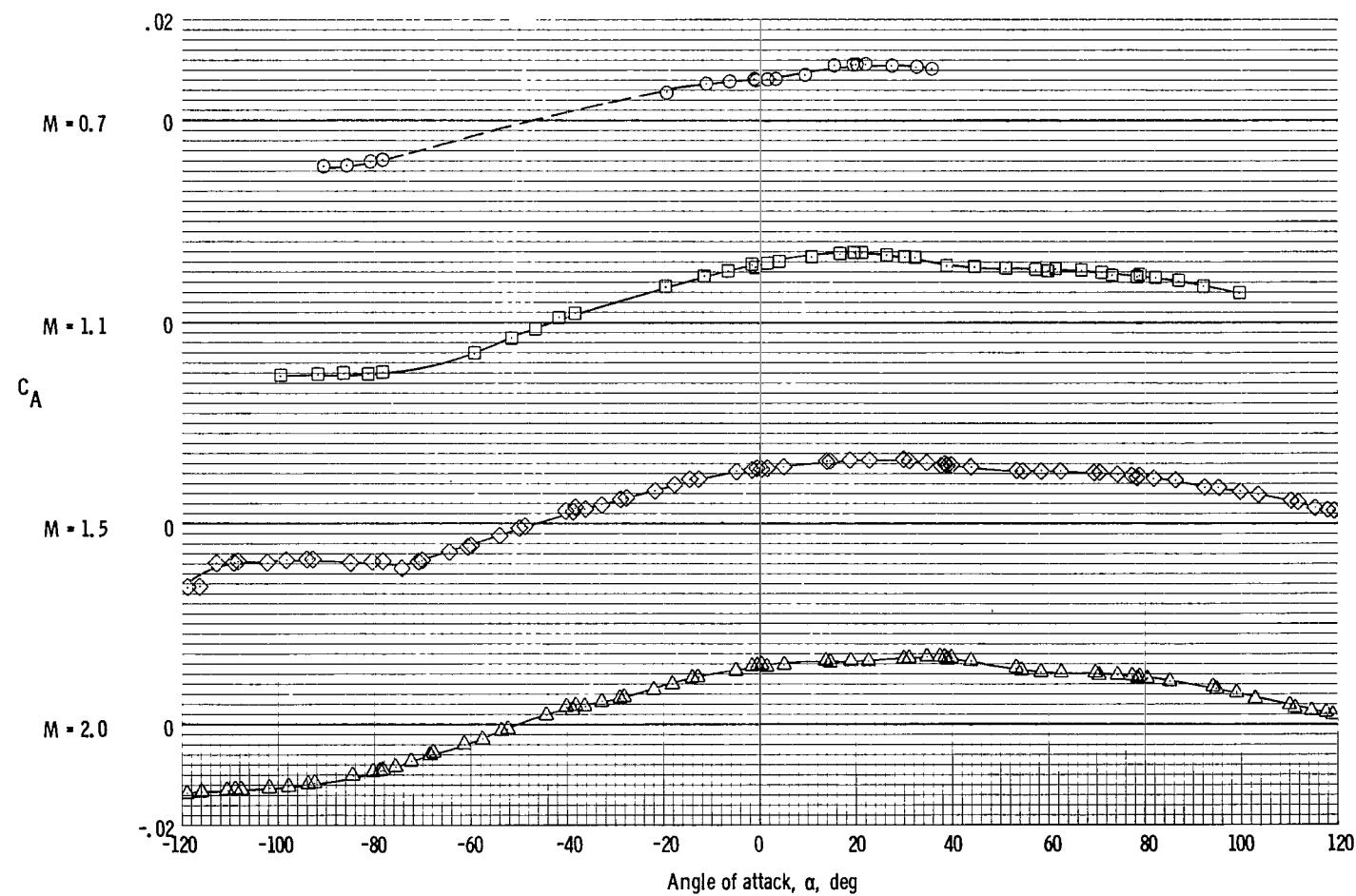
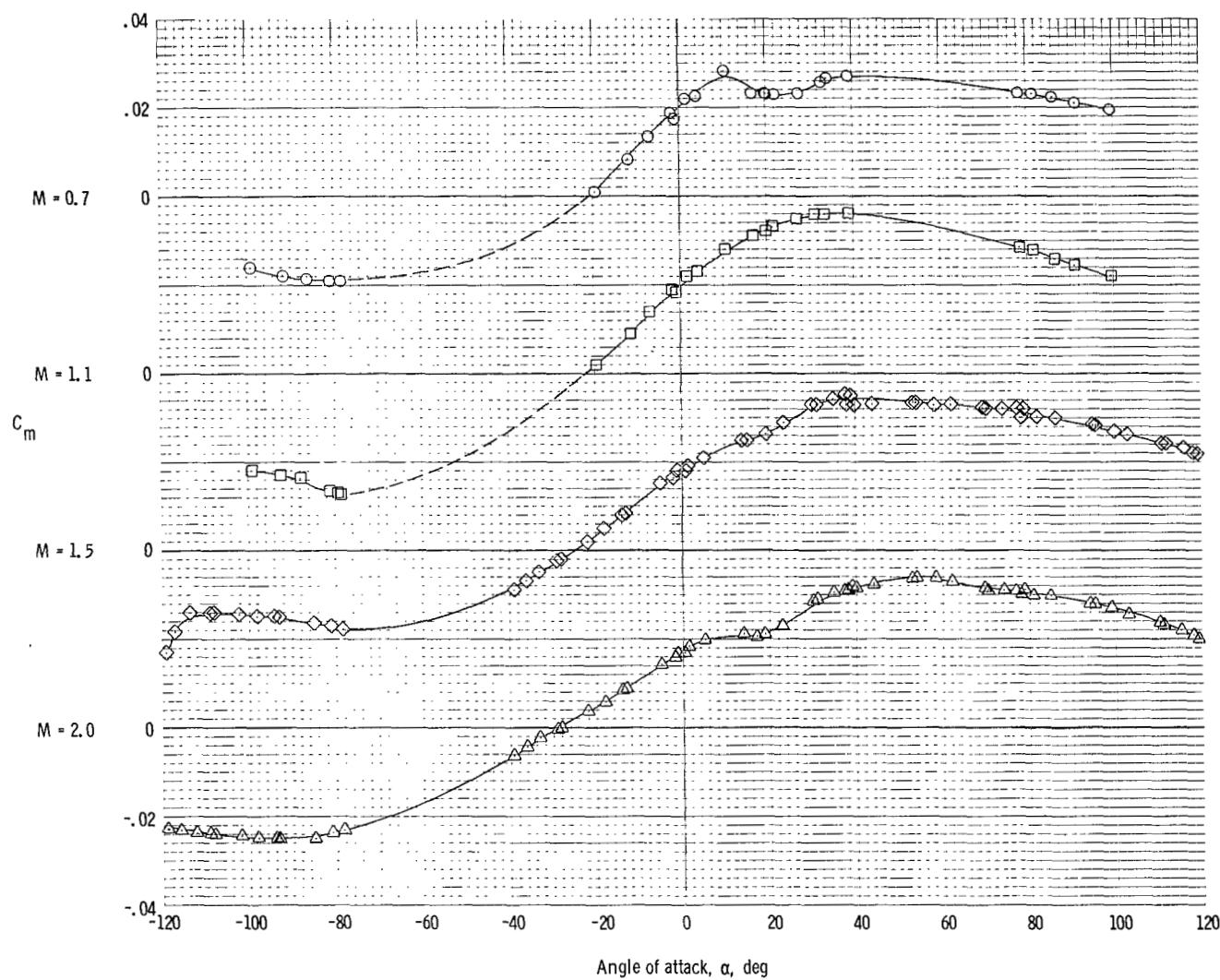
(h) Normal-force coefficient at $\delta = 90^\circ$.

Figure 11. - Continued.



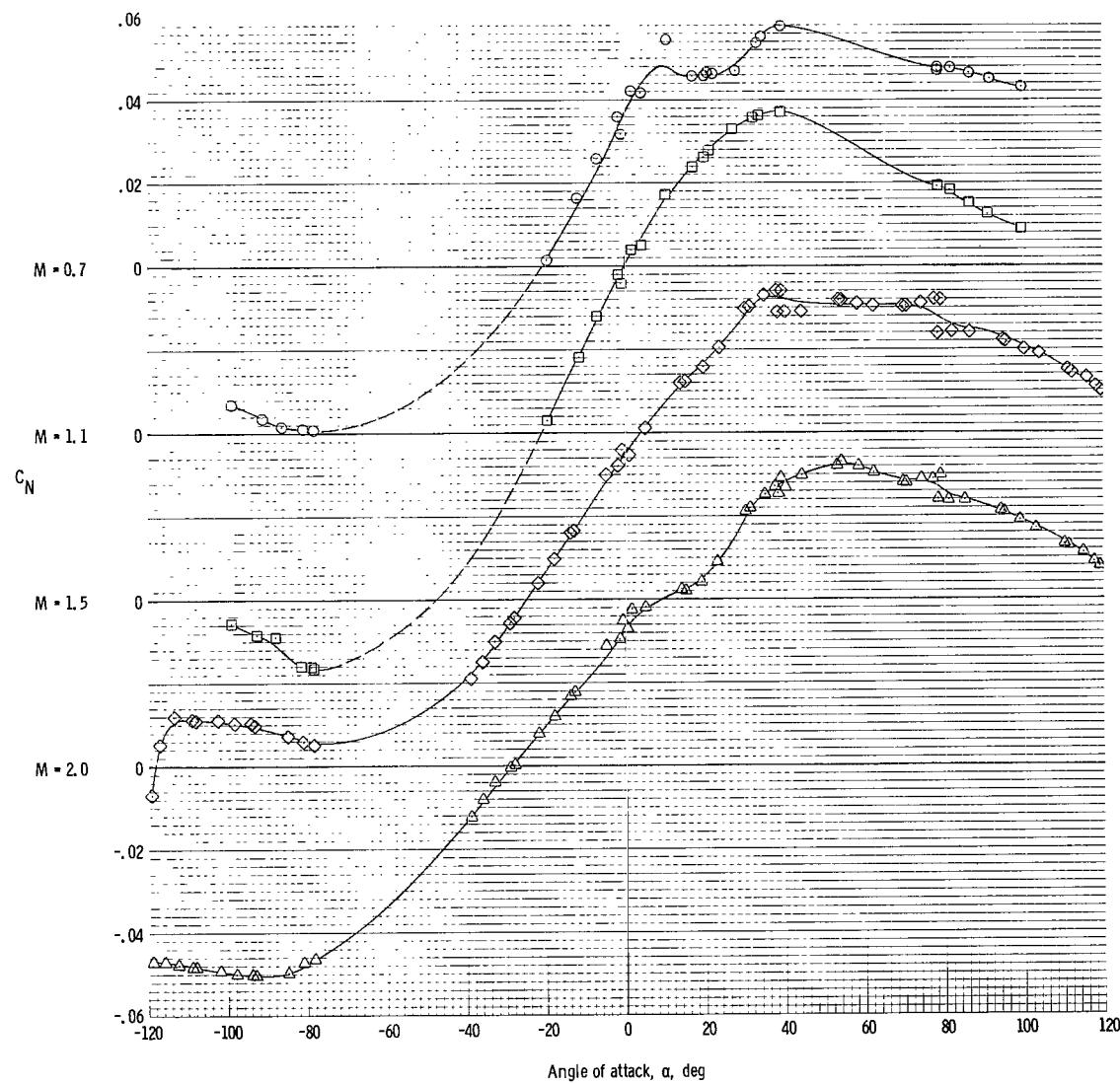
(i) Axial-force coefficient at $\delta = 90^\circ$.

Figure 11. - Continued.



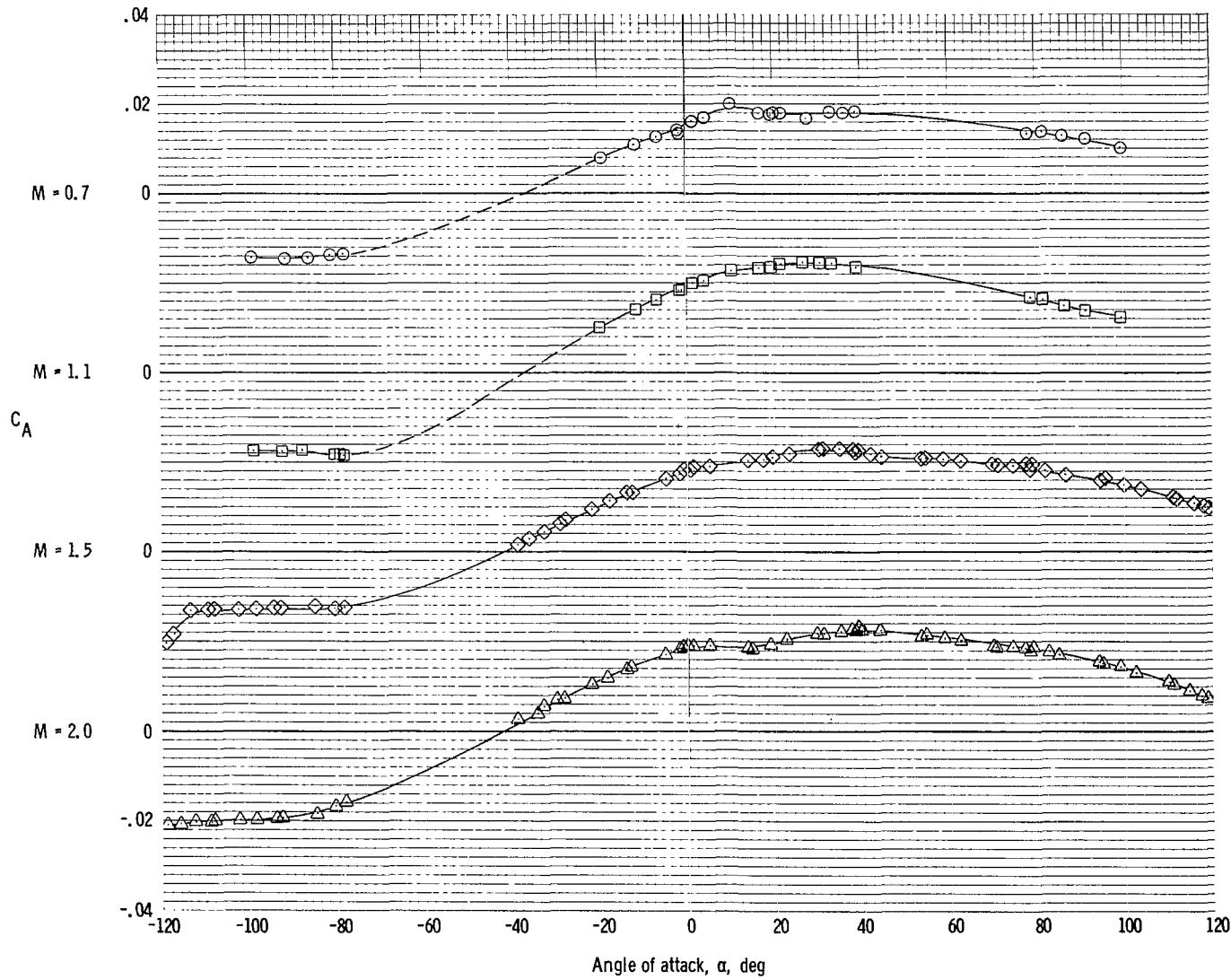
(j) Pitching-moment coefficient at $\delta = 115^\circ$.

Figure 11. - Continued.



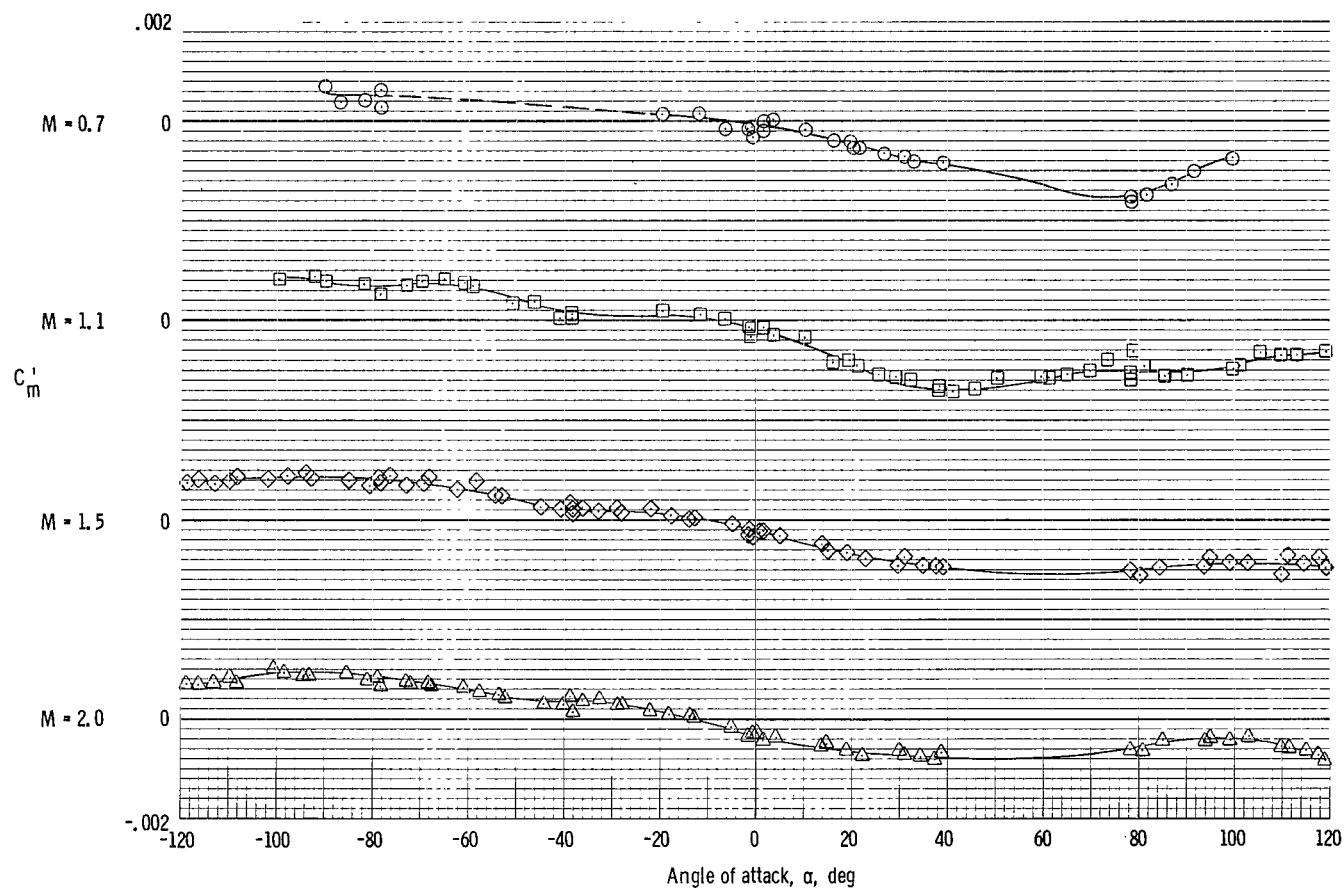
(k) Normal-force coefficient at $\delta = 115^\circ$.

Figure 11. - Continued.



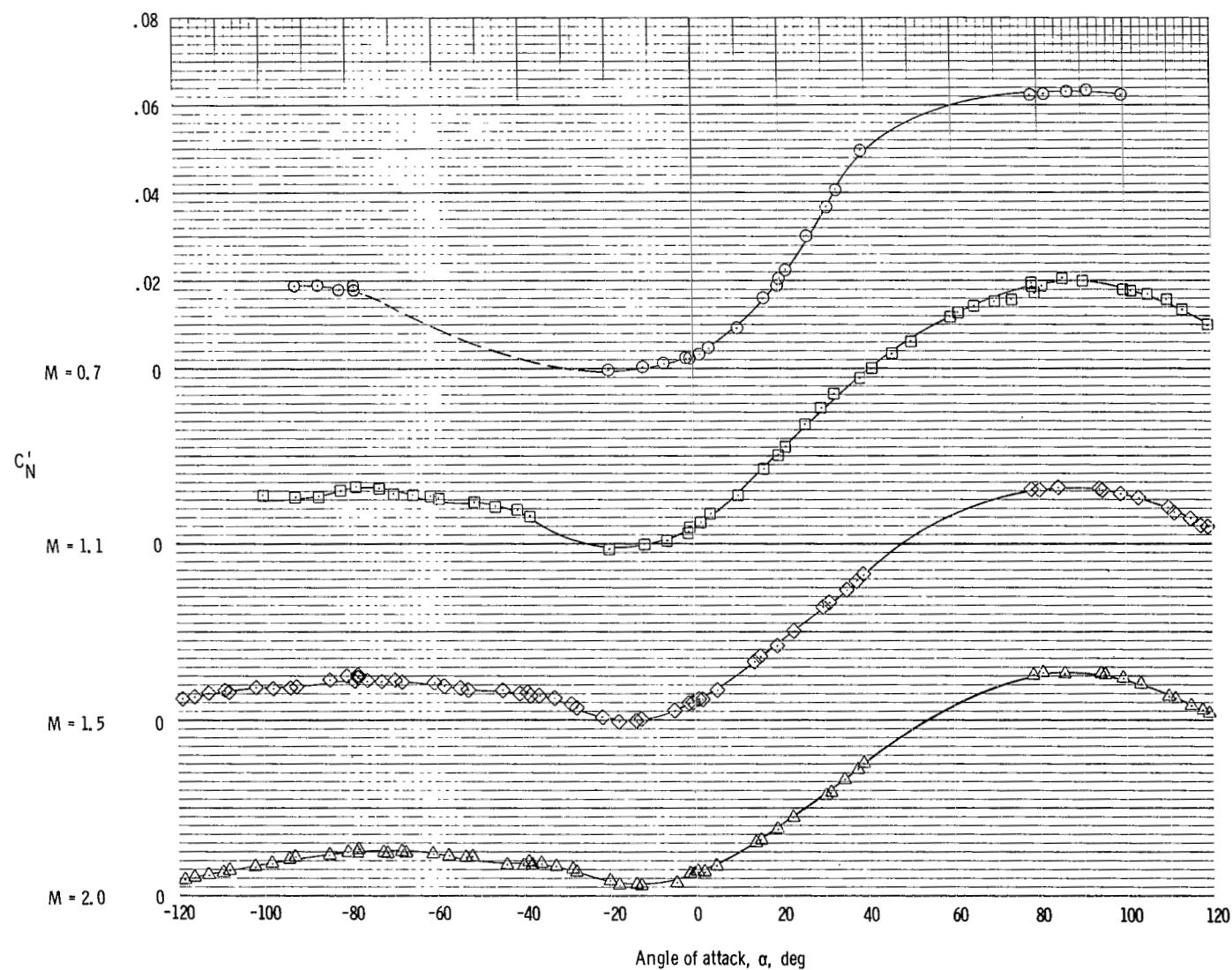
(1) Axial-force coefficient at $\delta = 115^\circ$.

Figure 11. - Concluded.



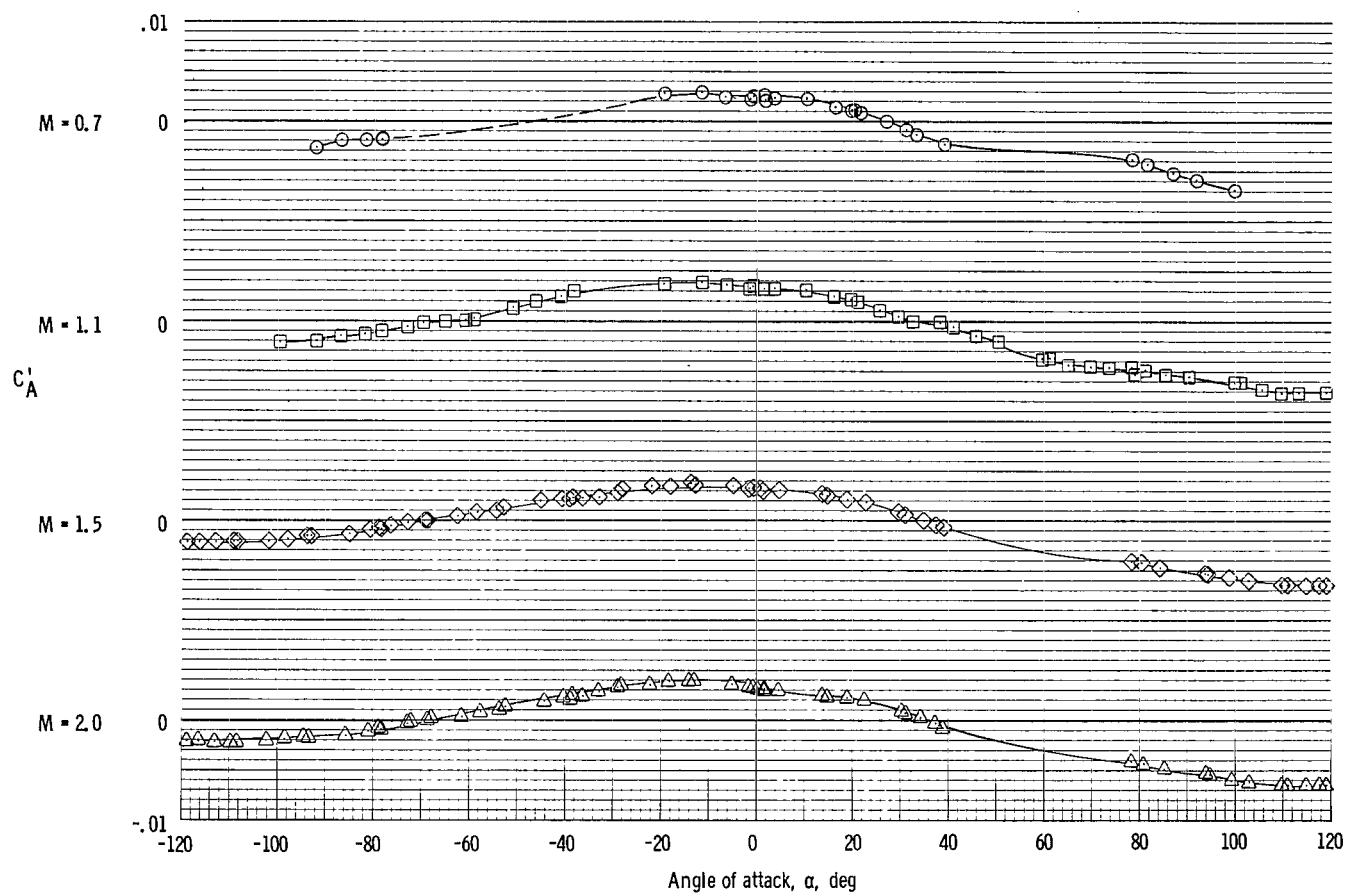
(a) Pitching-moment coefficient at $\delta = 30^\circ$.

Figure 12. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the system of canard axes at $M = 0.7, 1.1, 1.5$, and 2.0 at selected canard deployment angles.



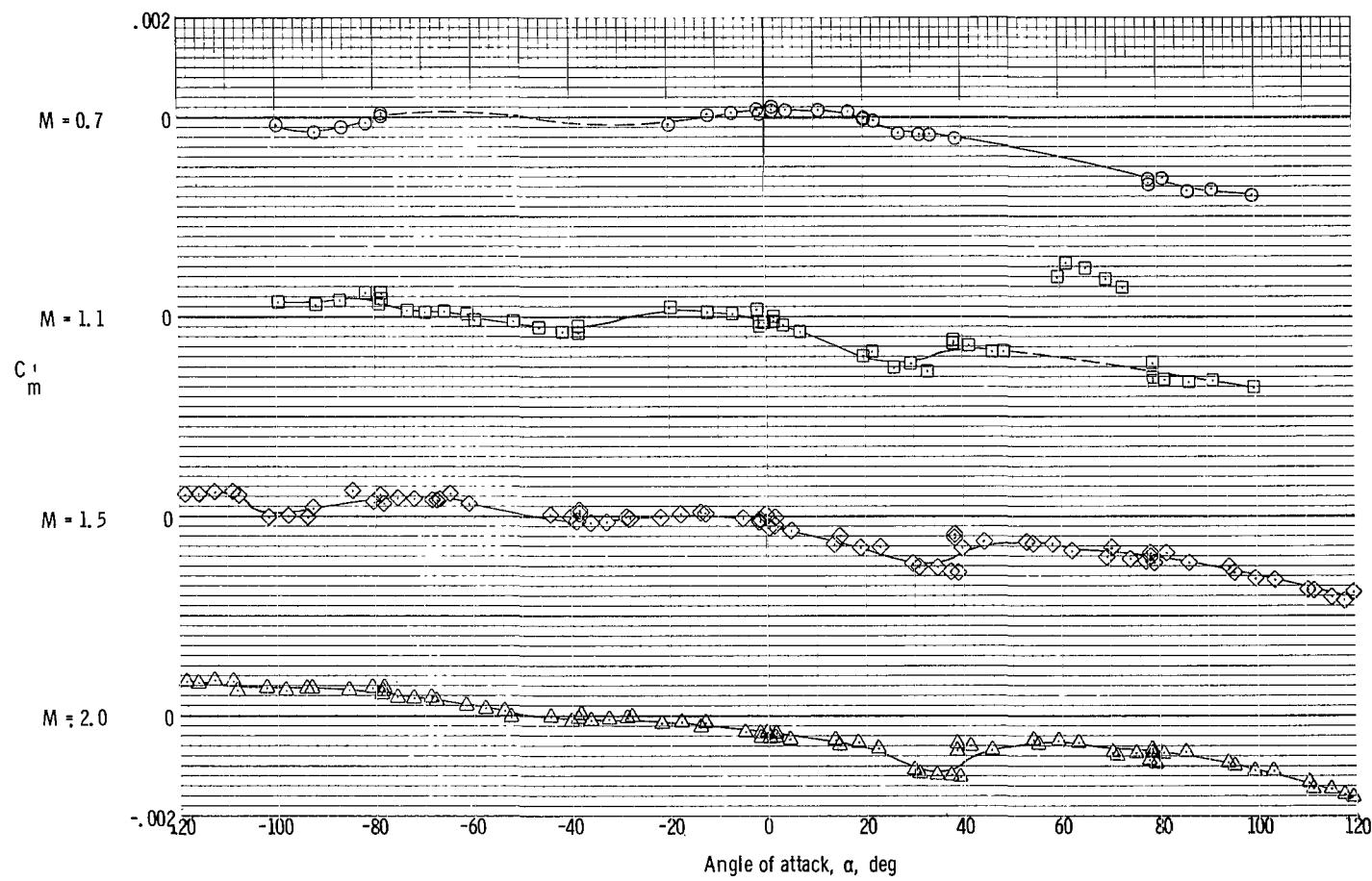
(b) Normal-force coefficient at $\delta = 30^\circ$.

Figure 12. - Continued.



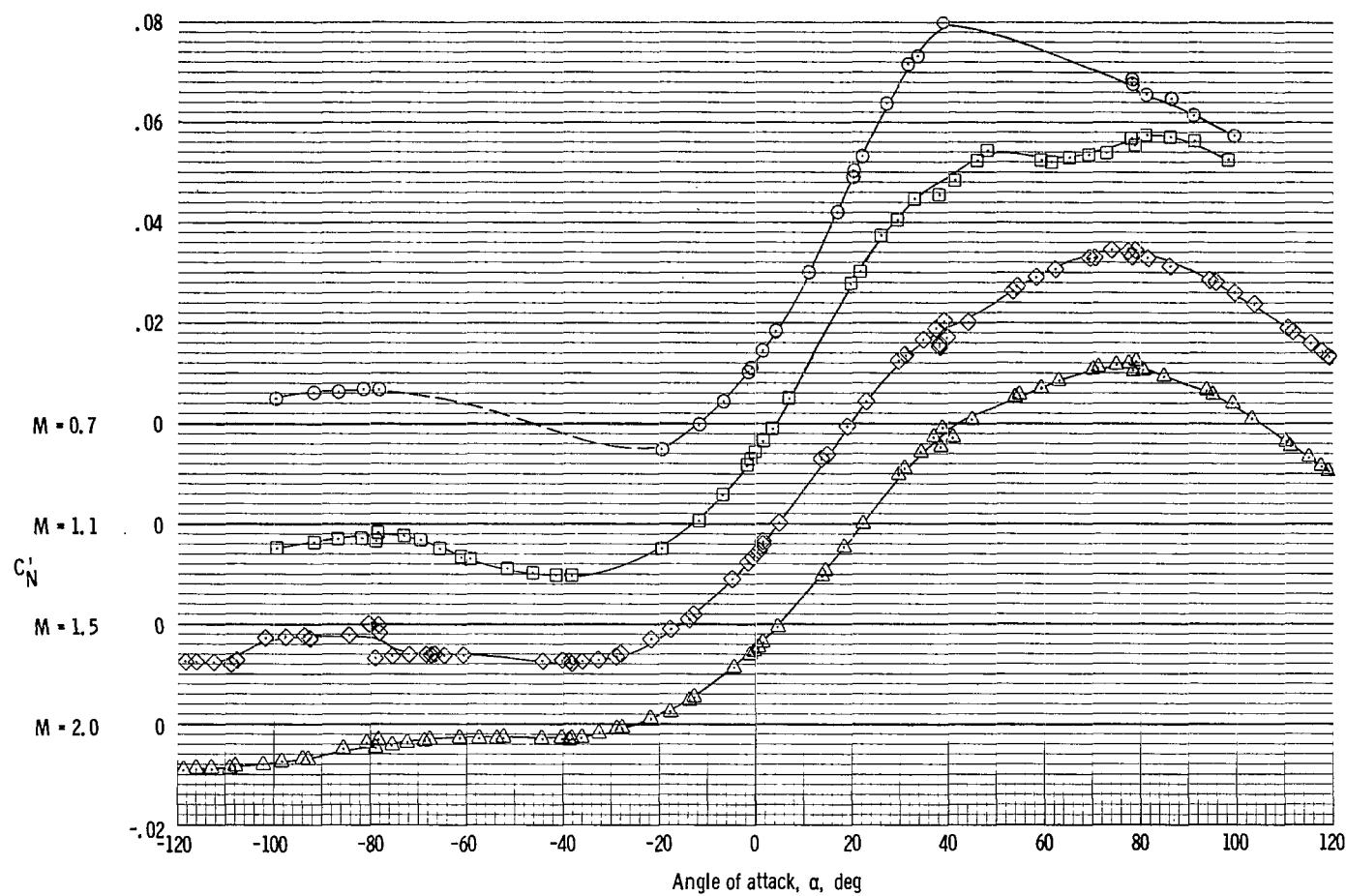
(c) Axial-force coefficient at $\delta = 30^\circ$.

Figure 12. - Continued.



(d) Pitching-moment coefficient at $\delta = 60^\circ$.

Figure 12. - Continued.



(e) Normal-force coefficient at $\delta = 60^\circ$.

Figure 12. - Continued.

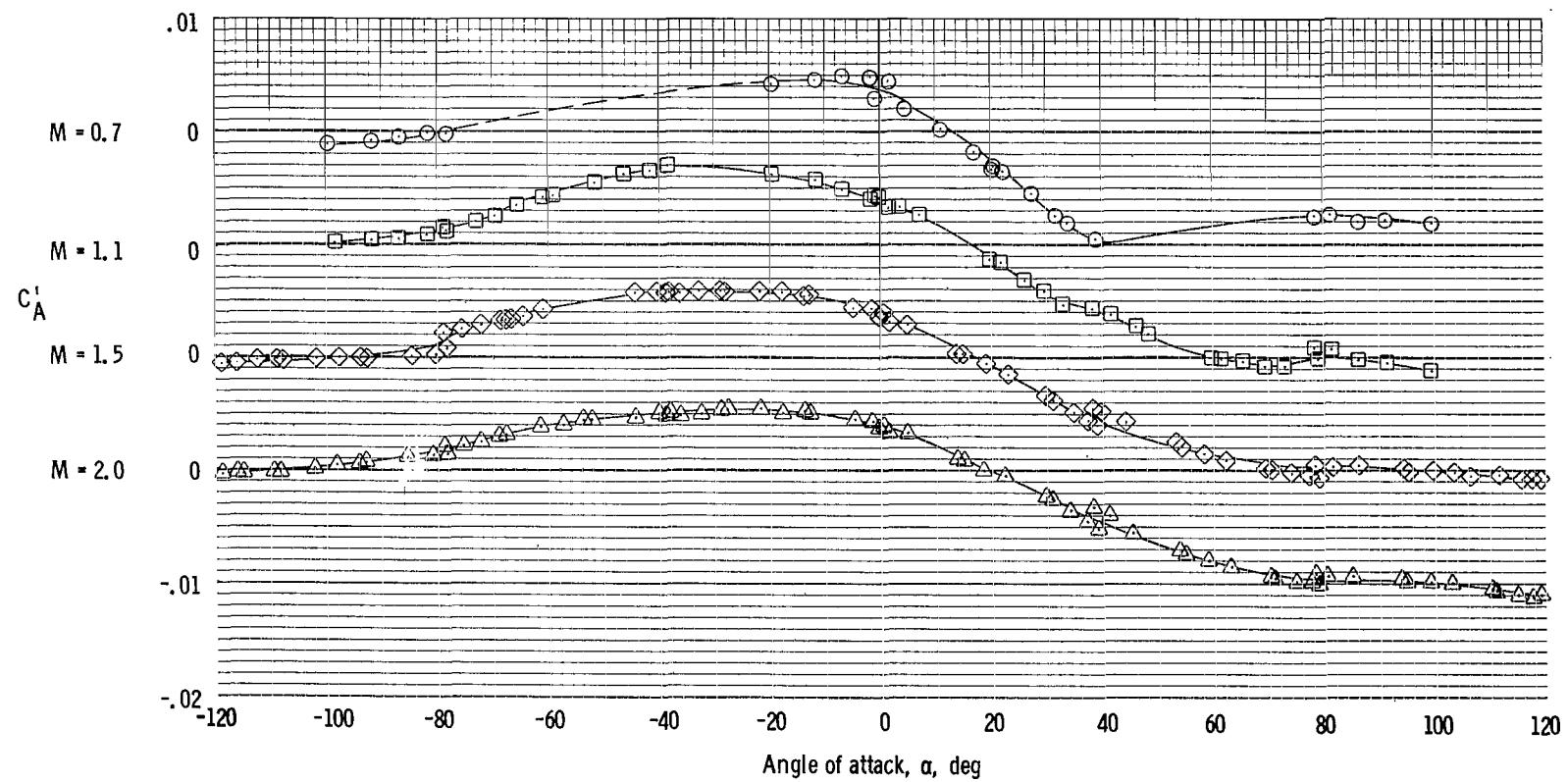
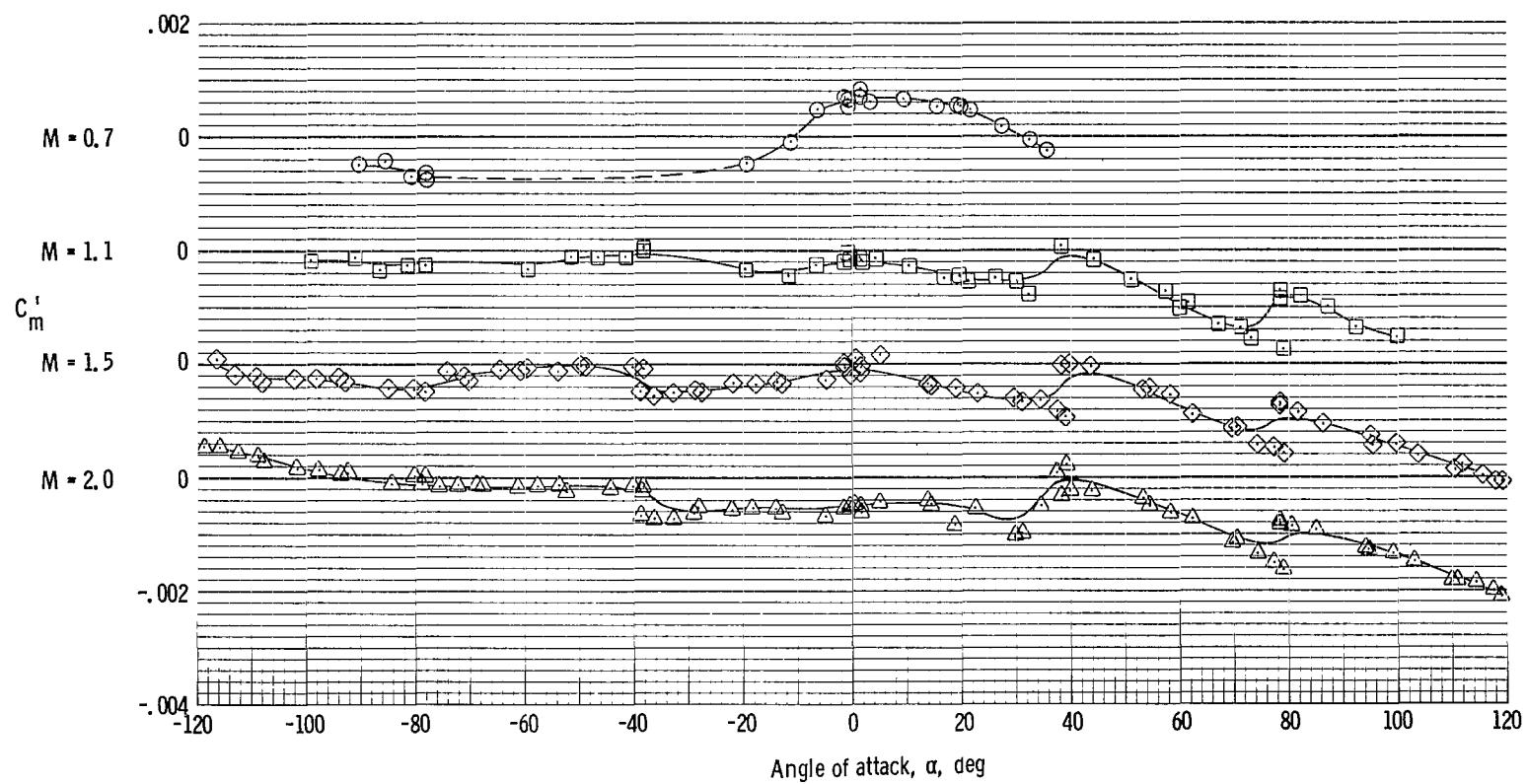
(f) Axial-force coefficient at $\delta = 60^\circ$.

Figure 12. - Continued.



(g) Pitching-moment coefficient at $\delta = 90^\circ$.

Figure 12. - Continued.

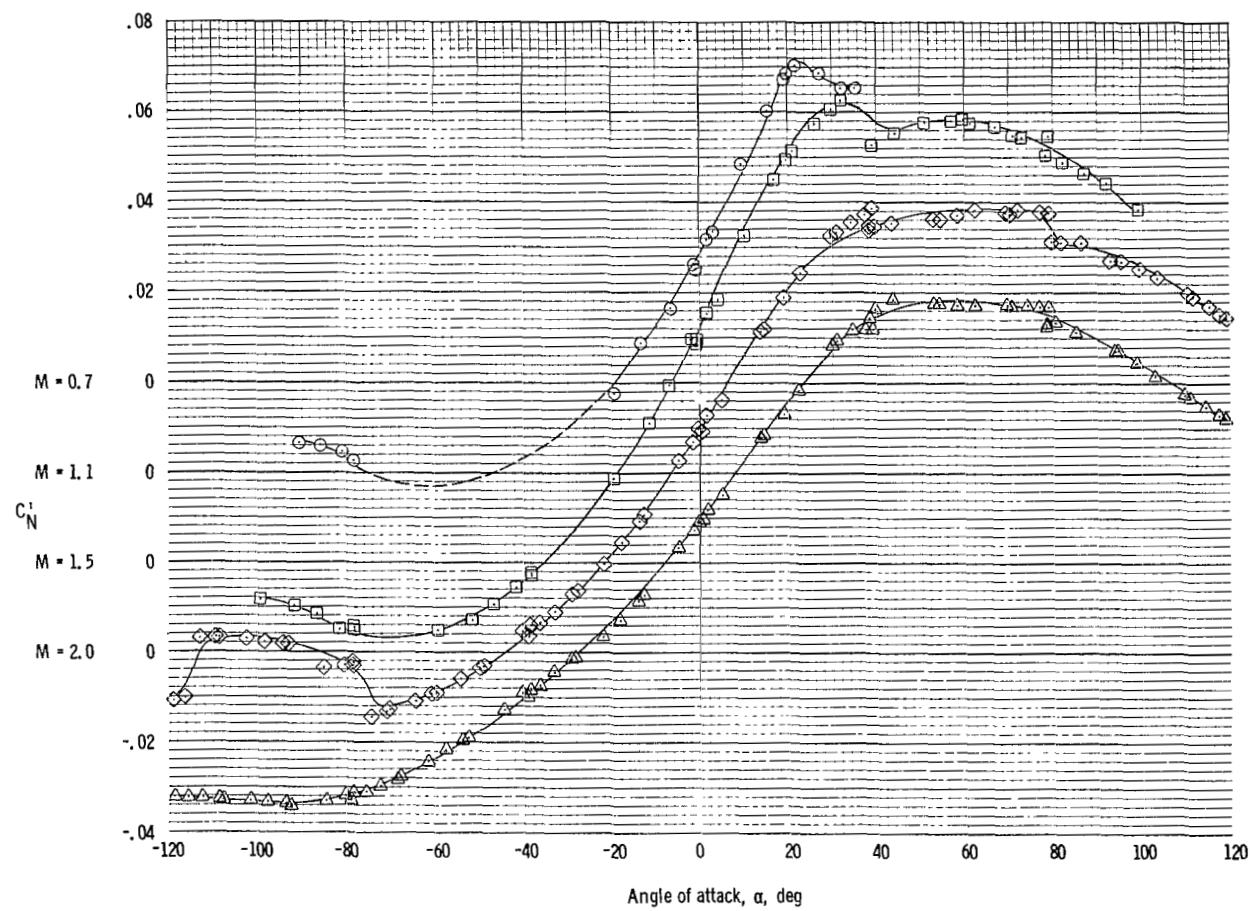
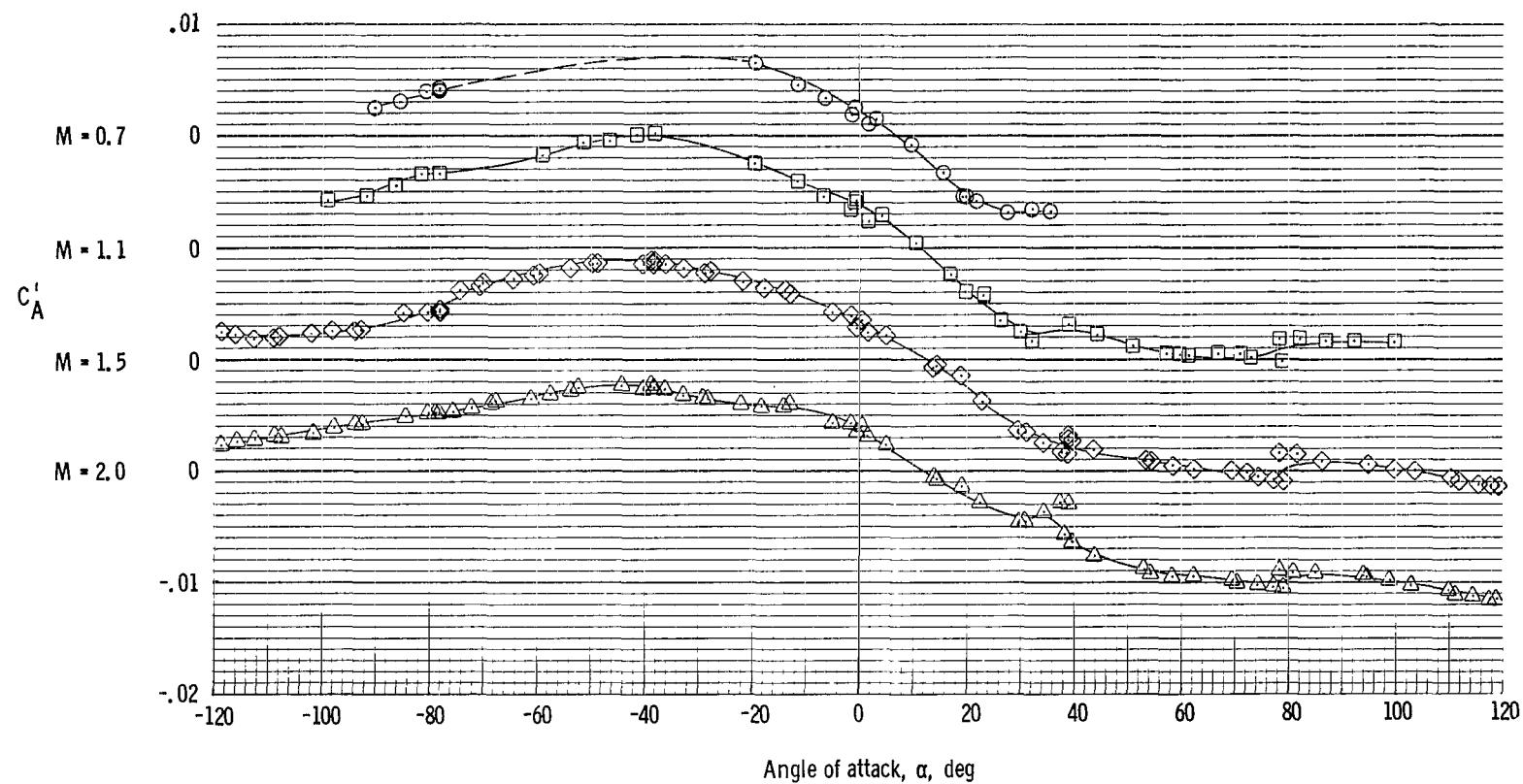
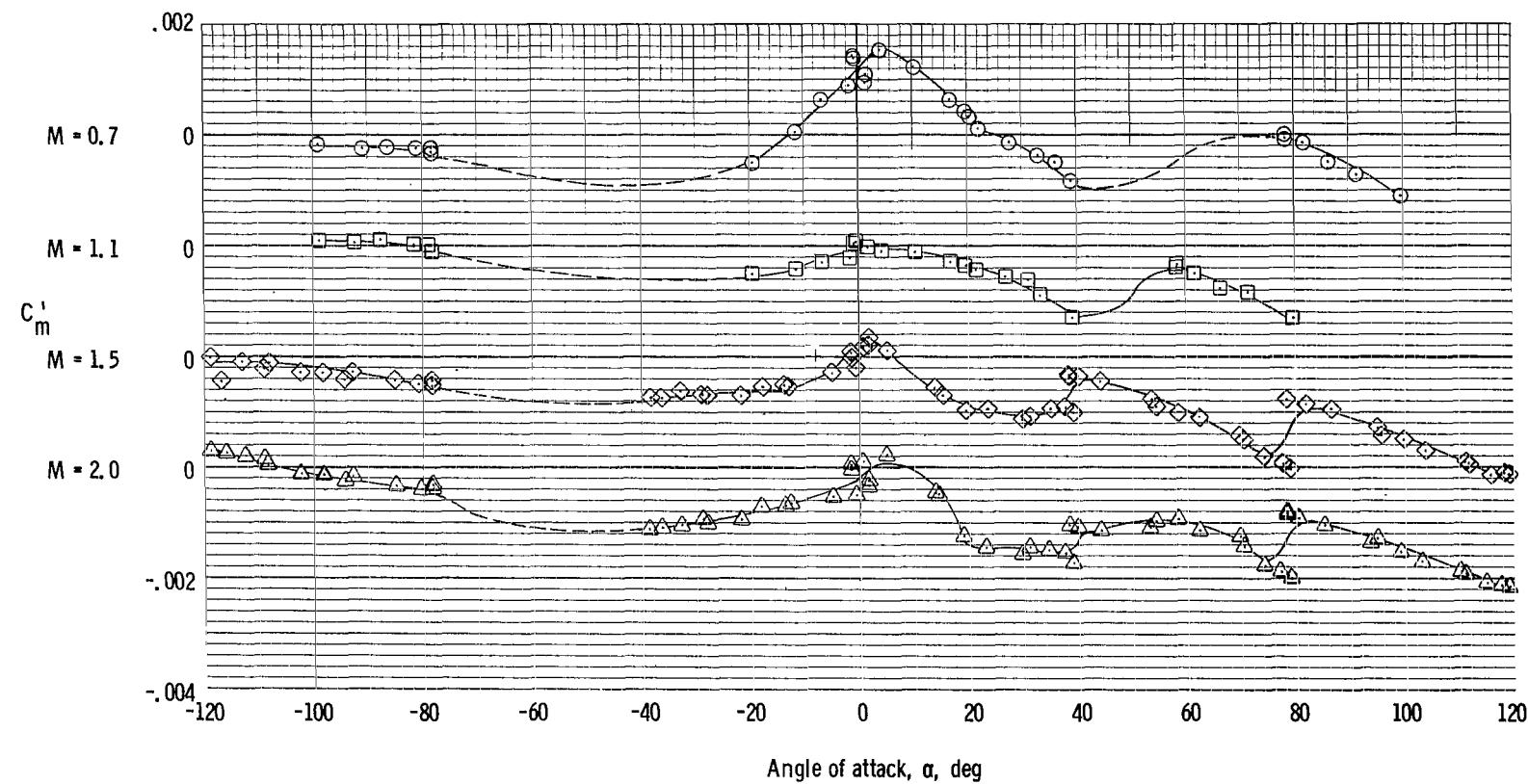
(h) Normal-force coefficient at $\delta = 90^\circ$.

Figure 12. - Continued.



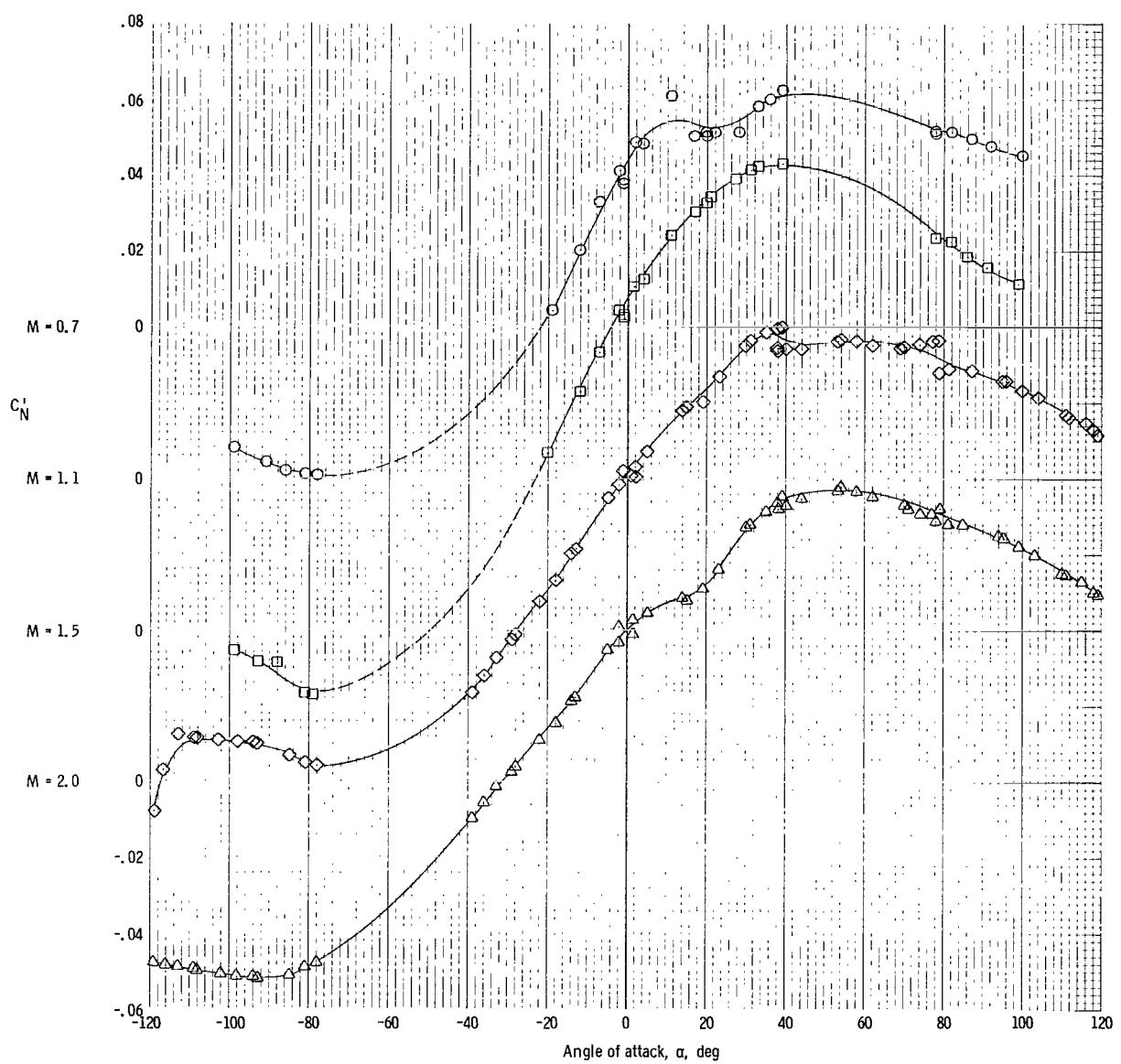
(i) Axial-force coefficient at $\delta = 90^\circ$.

Figure 12. - Continued.



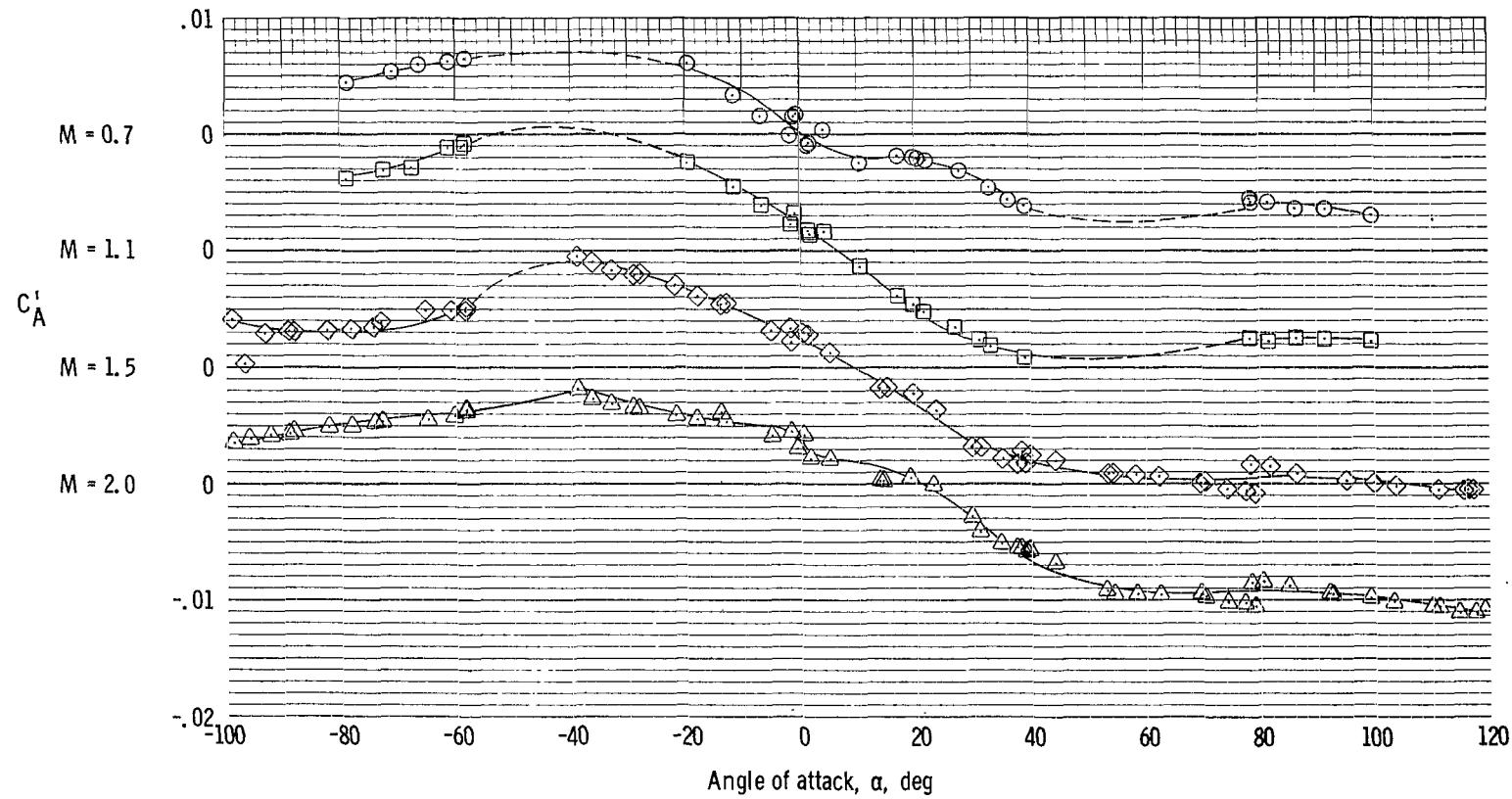
(j) Pitching-moment coefficient at $\delta = 115^\circ$.

Figure 12. - Continued.



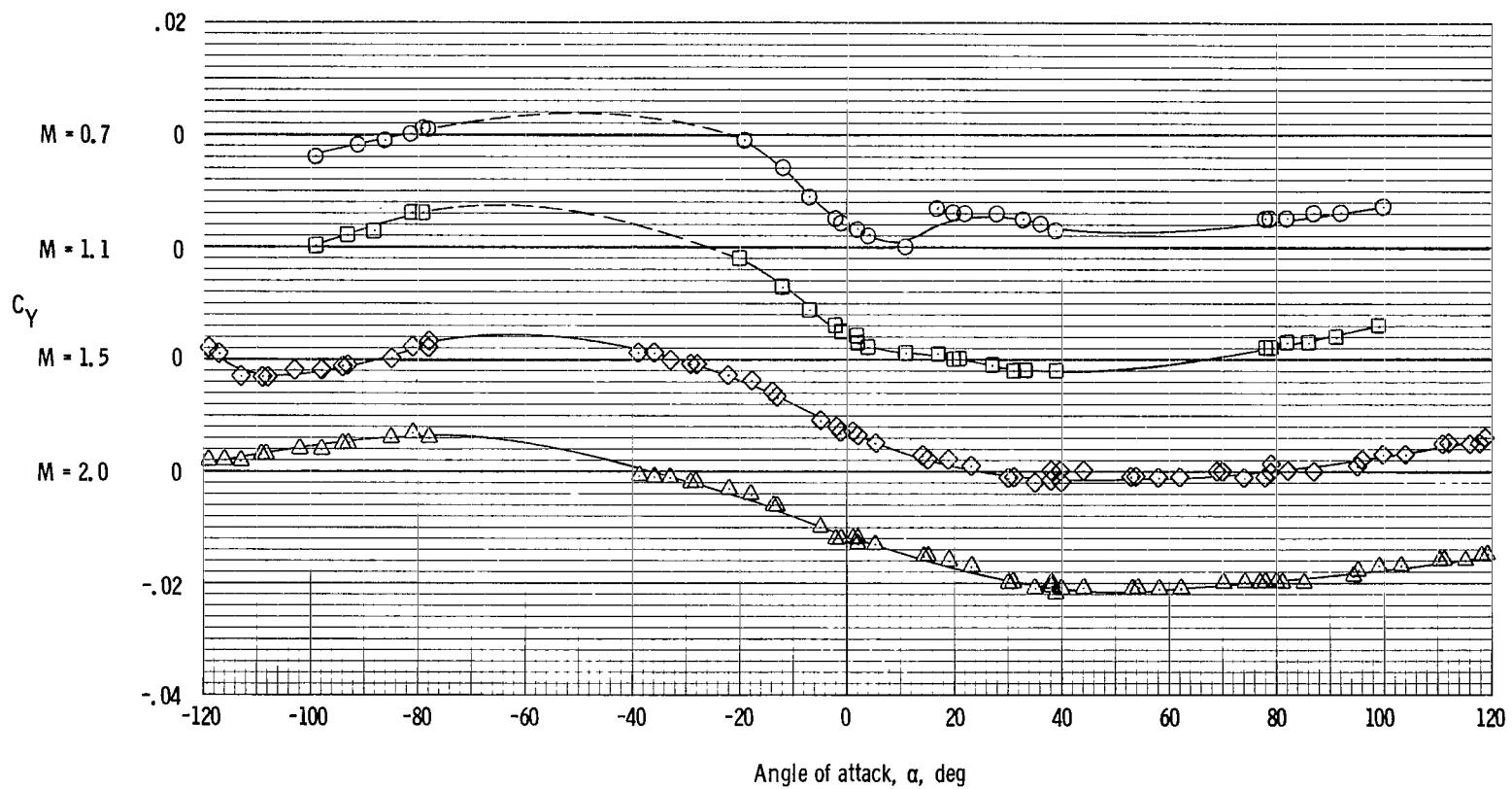
(k) Normal-force coefficient at $\delta = 115^\circ$.

Figure 12. - Continued.



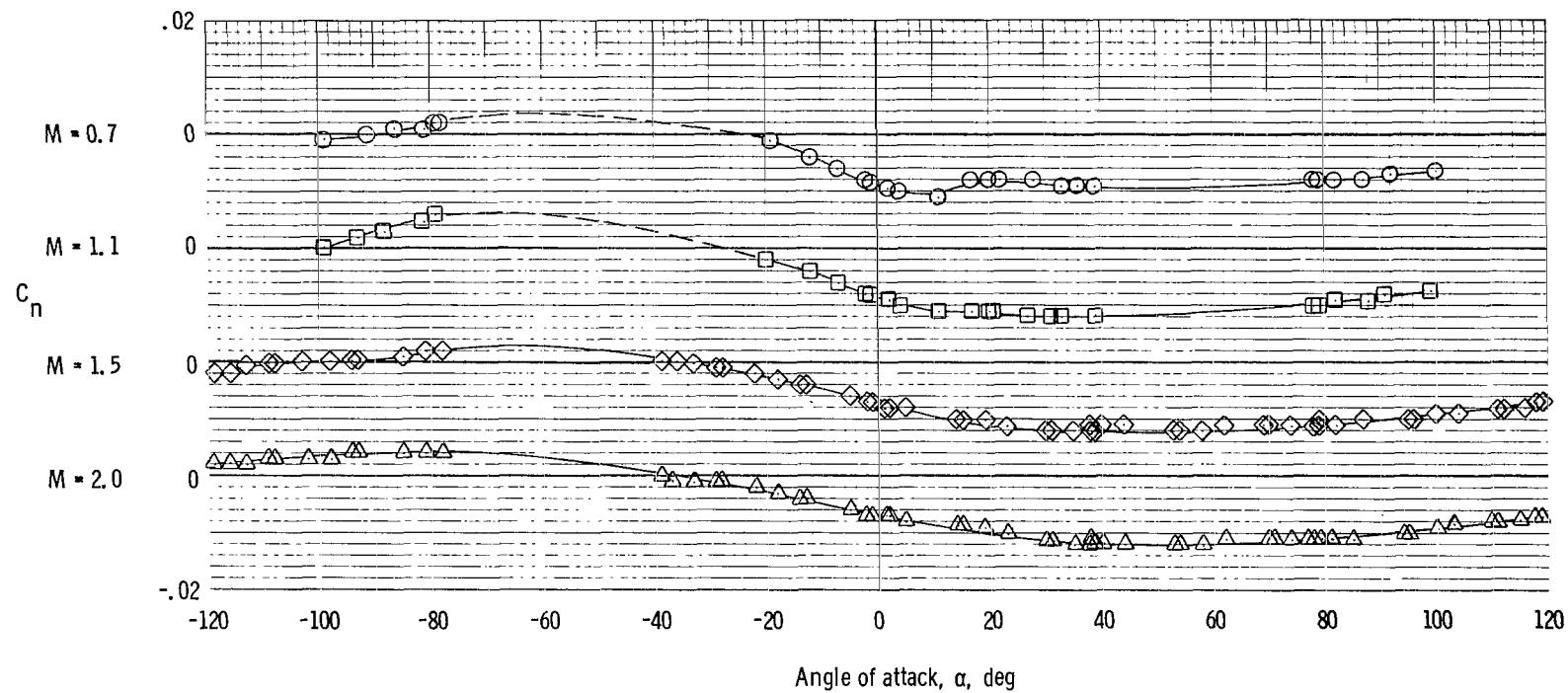
(l) Axial-force coefficient at $\delta = 115^\circ$.

Figure 12. - Concluded.



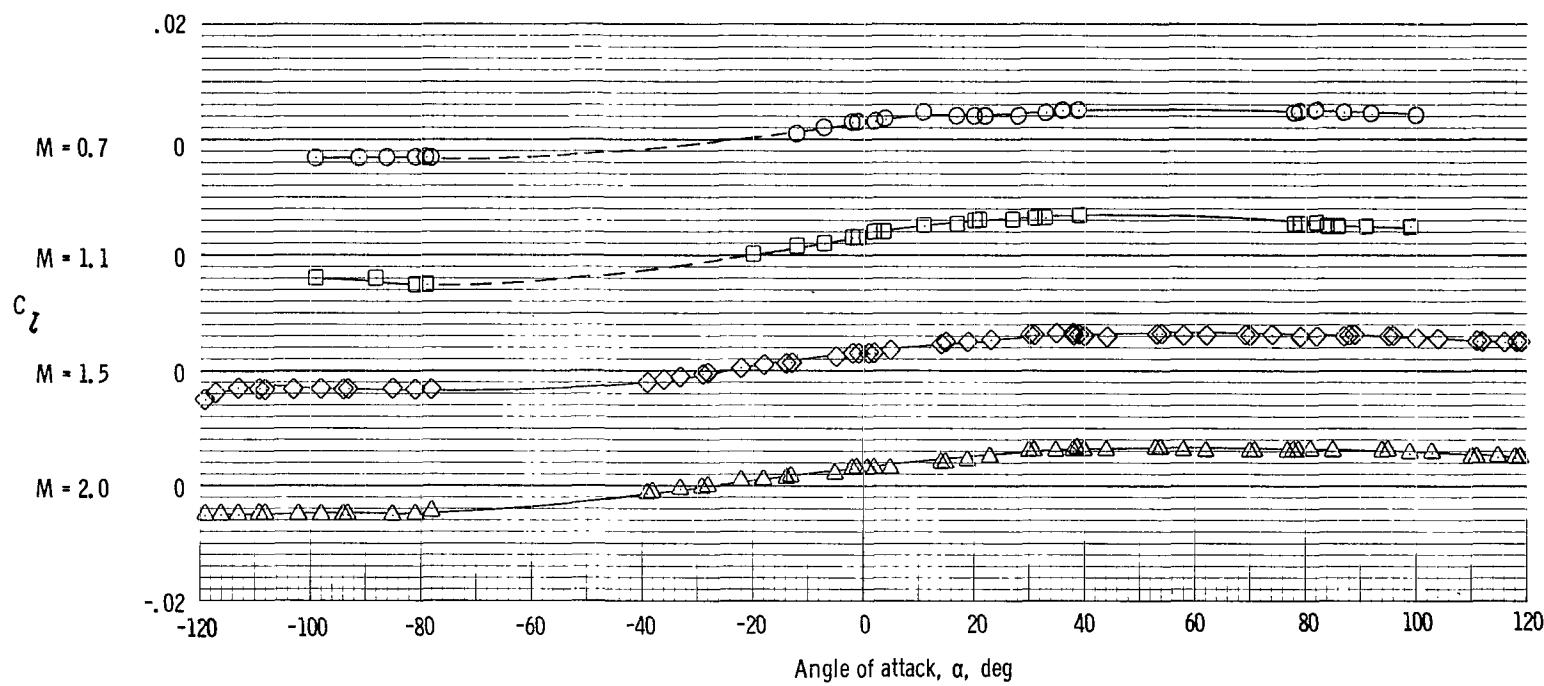
(a) Side-force coefficient.

Figure 13. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the body axes at $M = 0.7, 1.1, 1.5$, and 2.0 at $\delta = 115^\circ$.



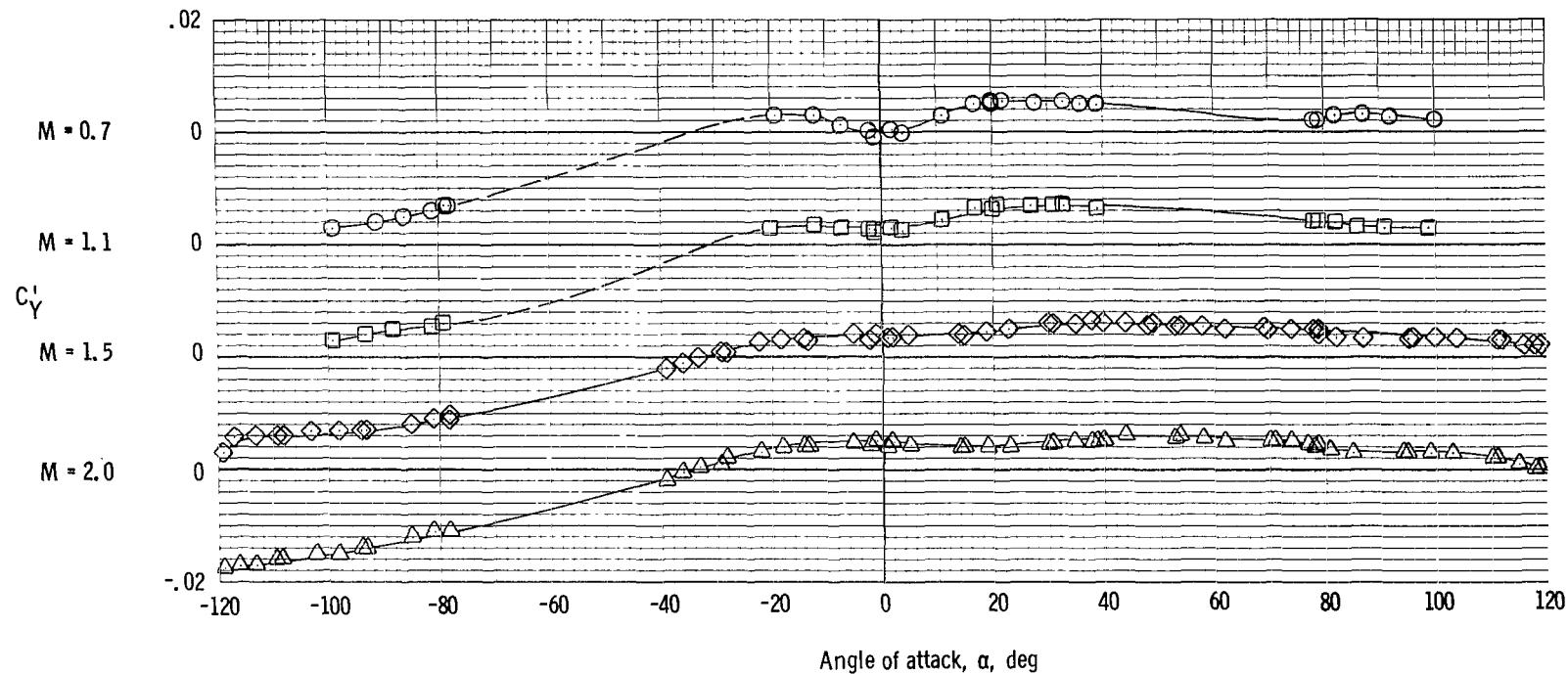
(b) Yawing-moment coefficient.

Figure 13. - Continued.



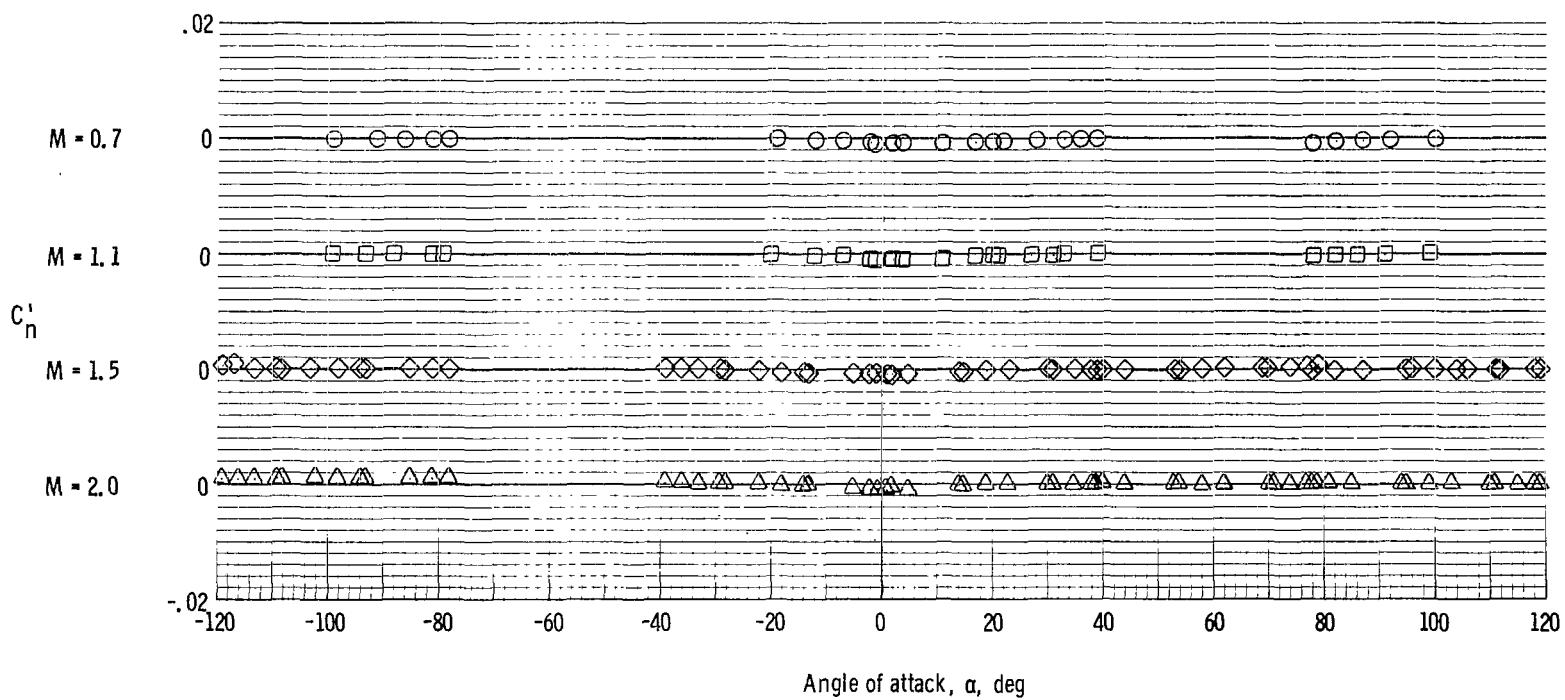
(c) Rolling-moment coefficient.

Figure 13. - Concluded.



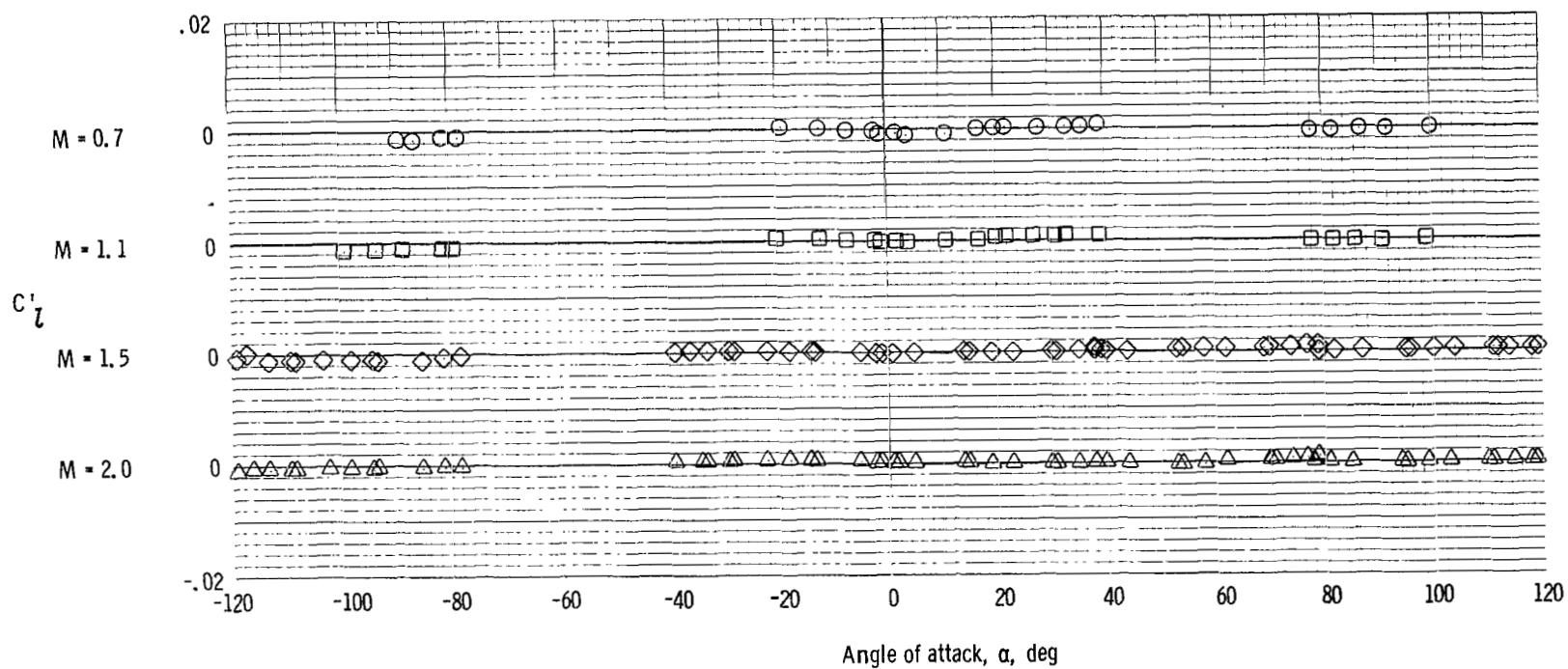
(a) Side-force coefficient.

Figure 14. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the canard axes at $M = 0.7, 1.1, 1.5$, and 2.0 at $\delta = 115^\circ$.



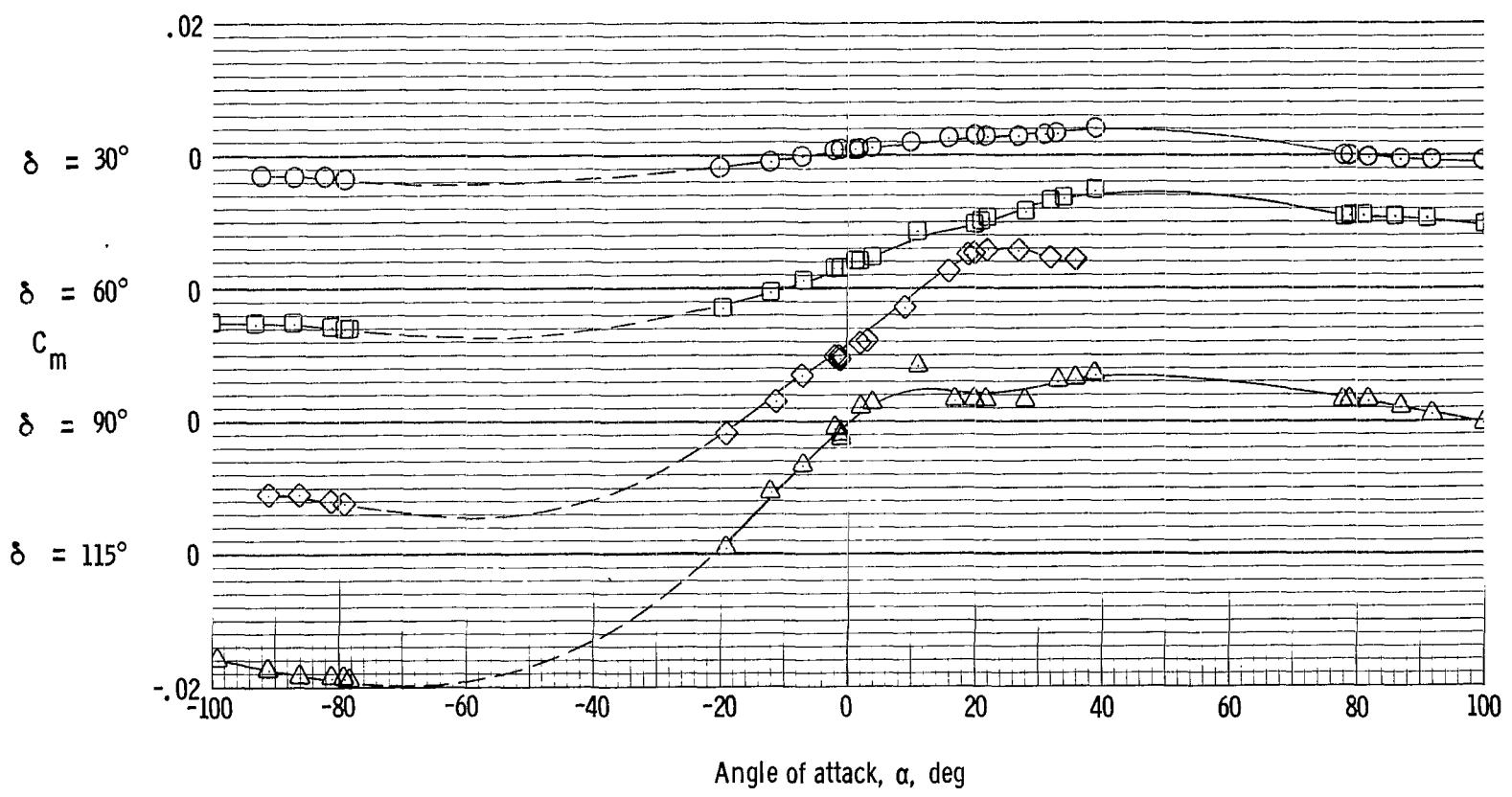
(b) Yawing-moment coefficient.

Figure 14. - Continued.



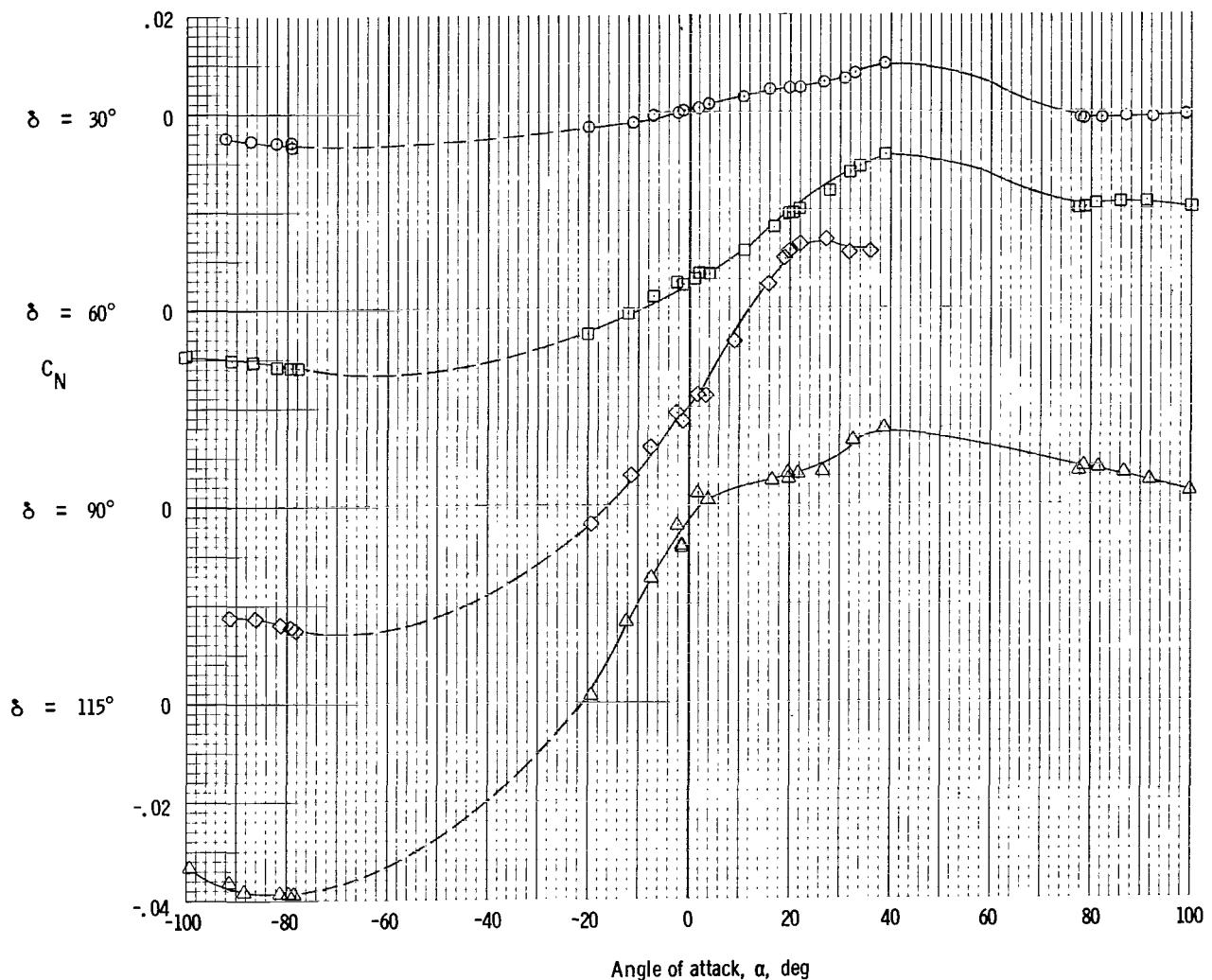
(c) Rolling-moment coefficient.

Figure 14. - Concluded.



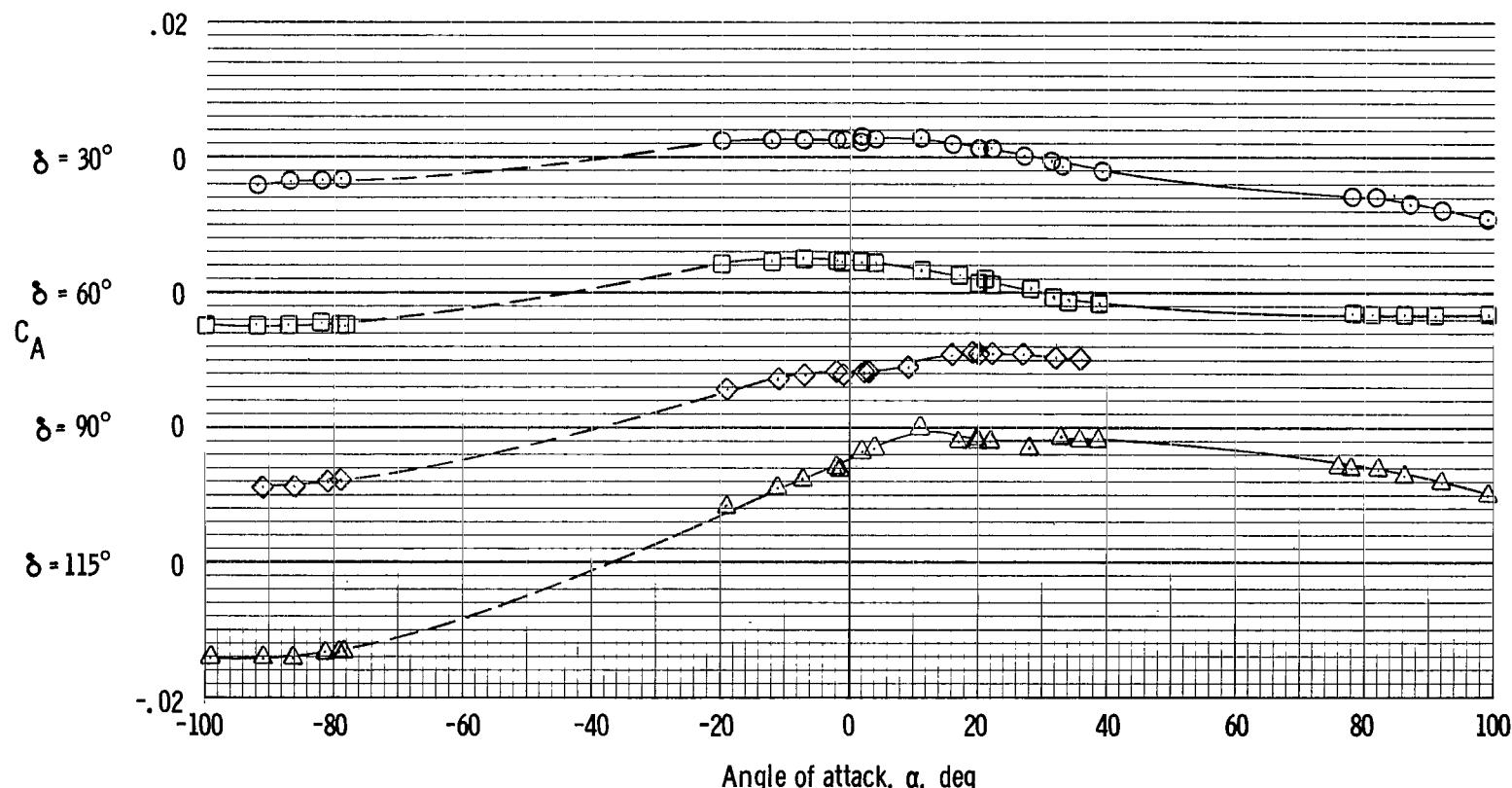
(a) Pitching-moment coefficient.

Figure 15. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the body axes, at deployment angles of 30° , 60° , 90° , and 115° at $M = 0.70$.



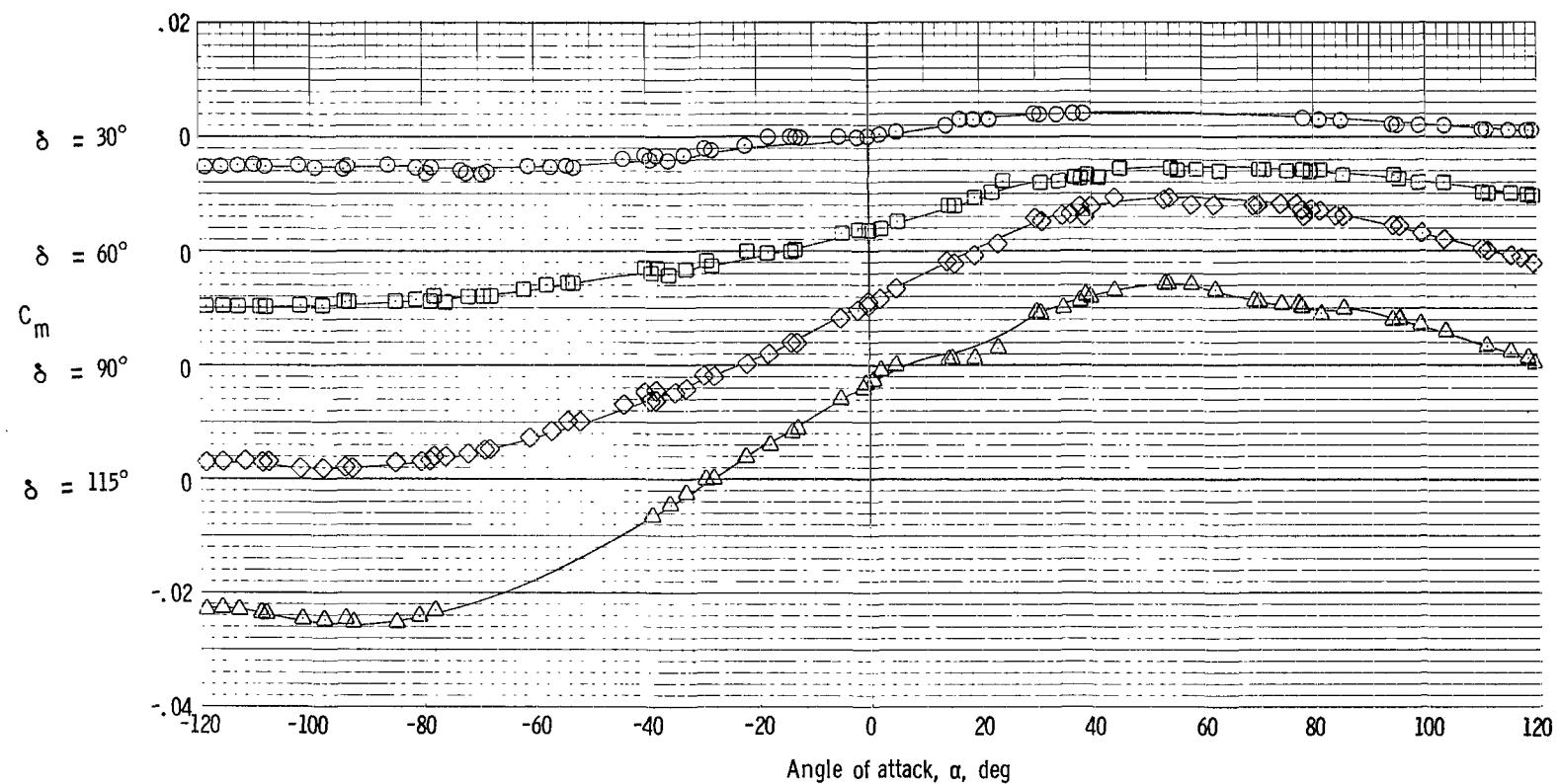
(b) Normal-force coefficient.

Figure 15. - Continued.



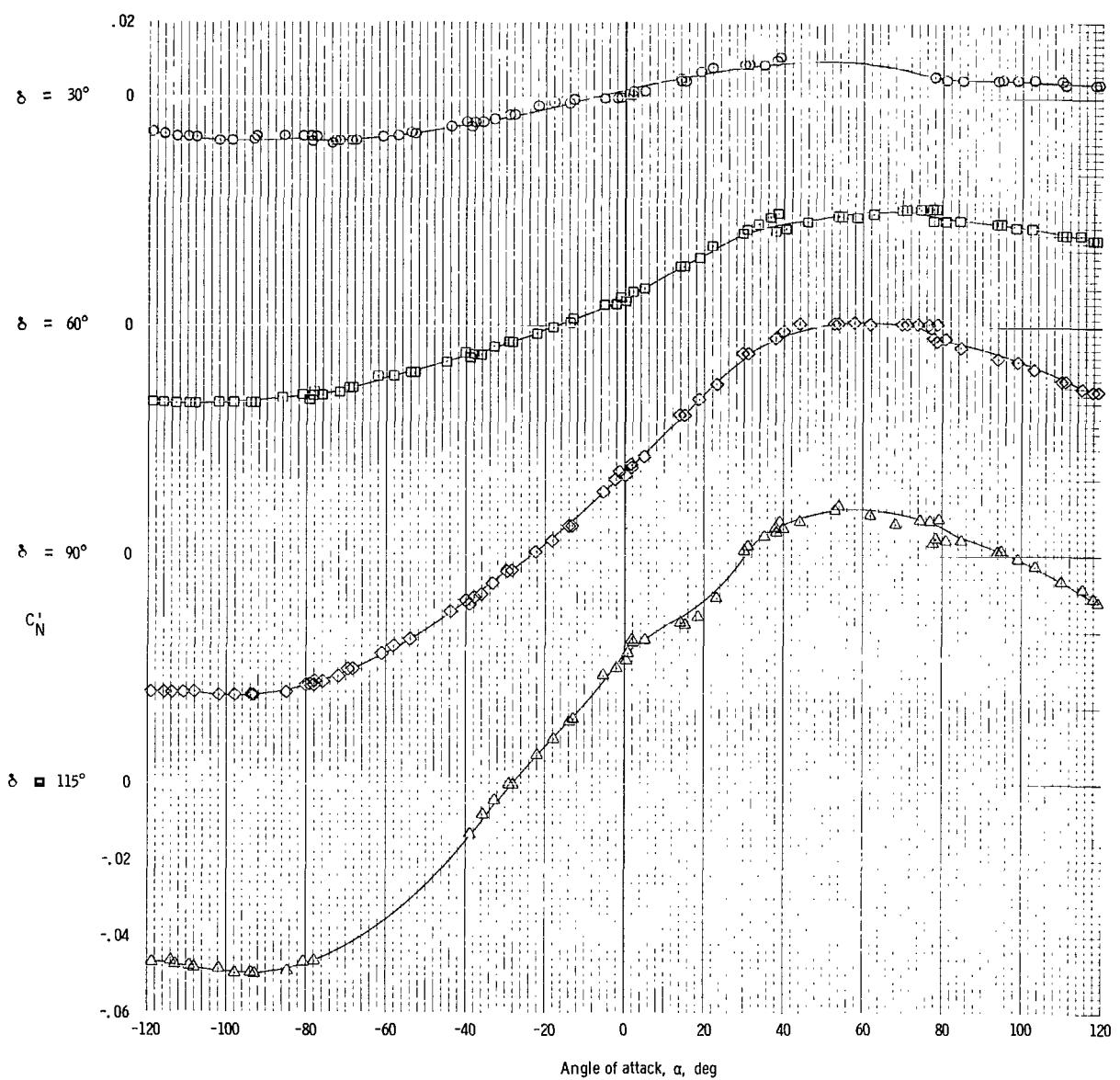
(c) Axial-force coefficient.

Figure 15. - Concluded.



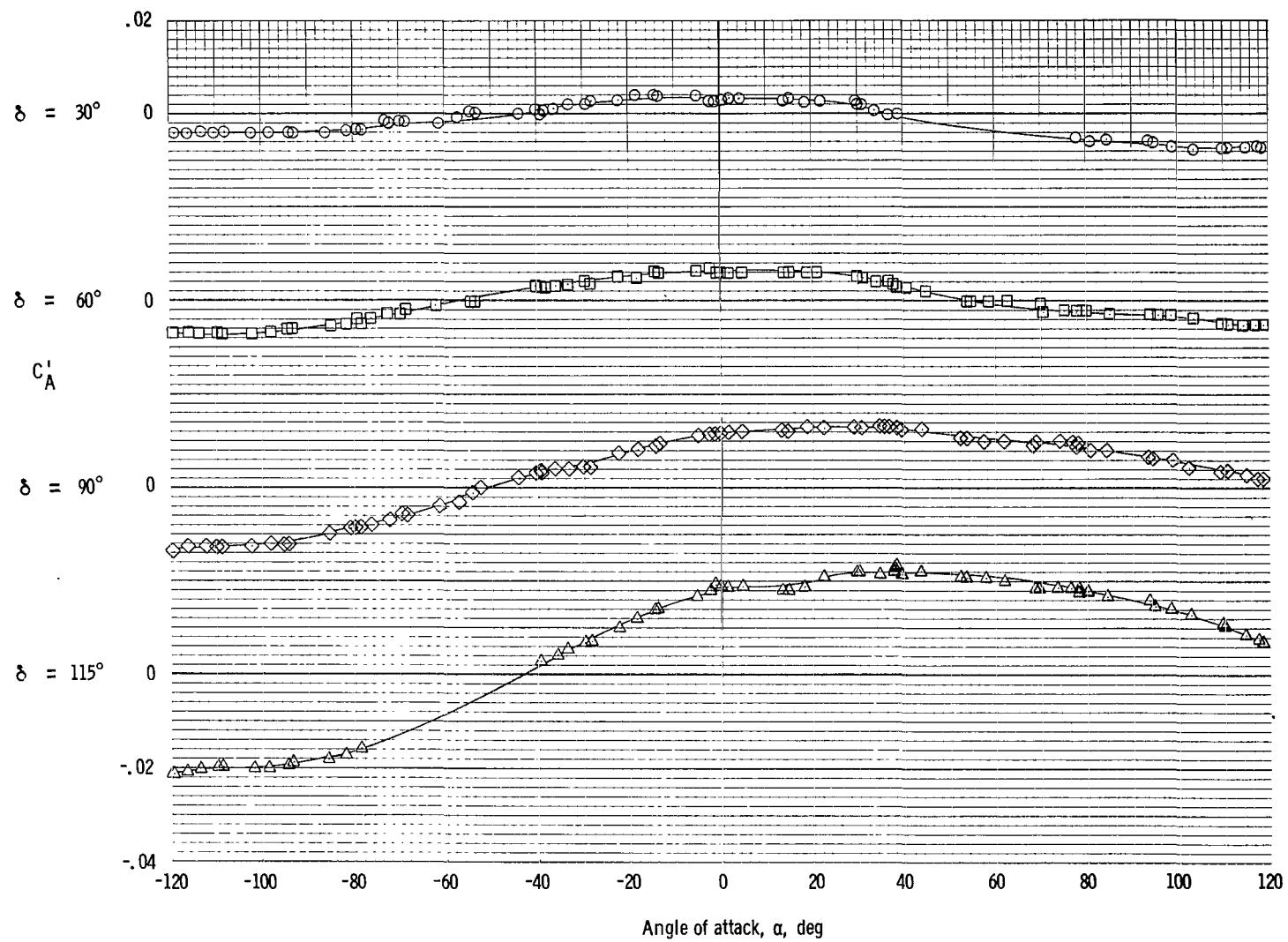
(a) Pitching-moment coefficient.

Figure 16. - Selected aerodynamic characteristics of the loads test model measured about the body axes, at deployment angles of 30° , 60° , 90° , and 115° at $M = 2.0$.



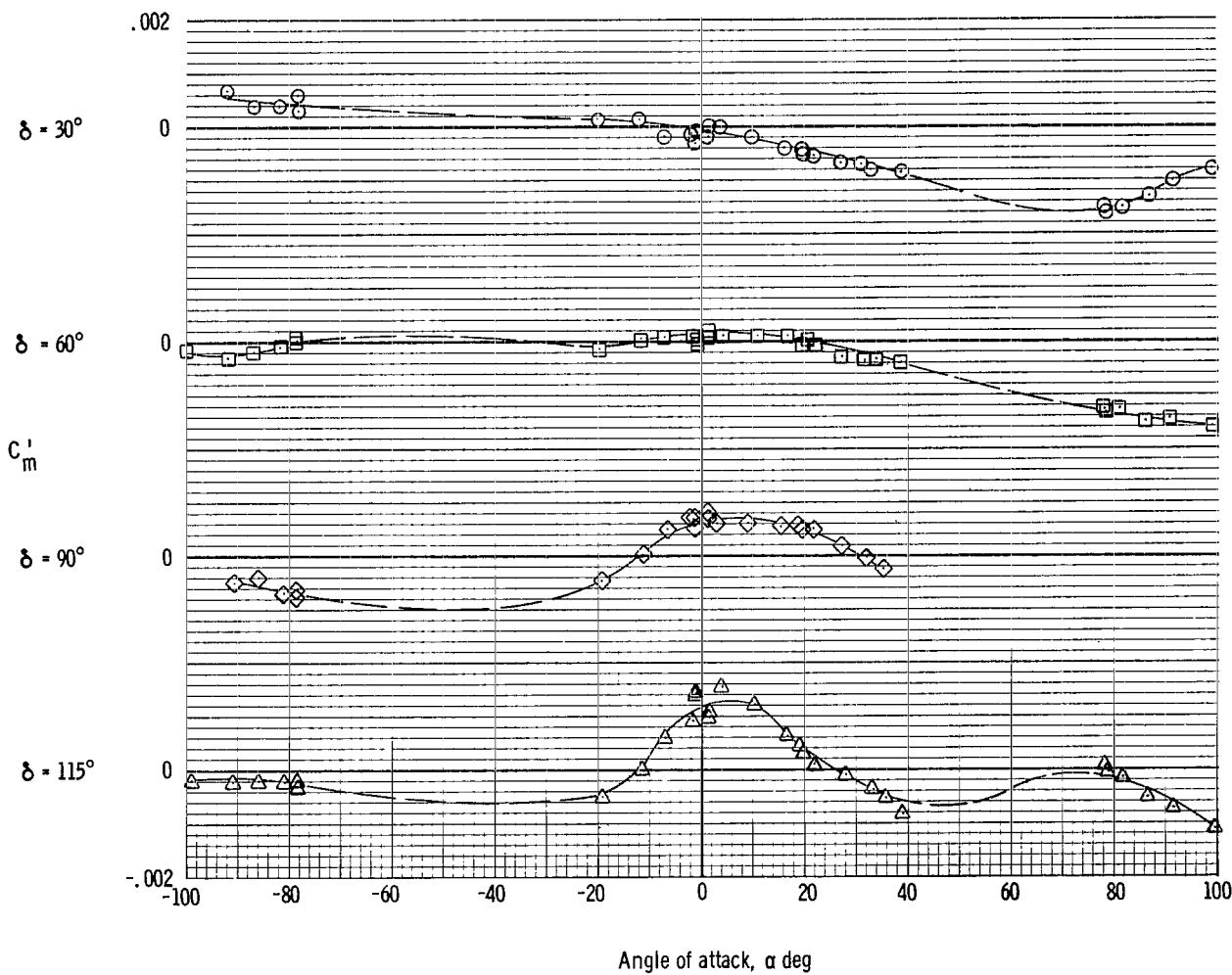
(b) Normal-force coefficient.

Figure 16. - Continued.



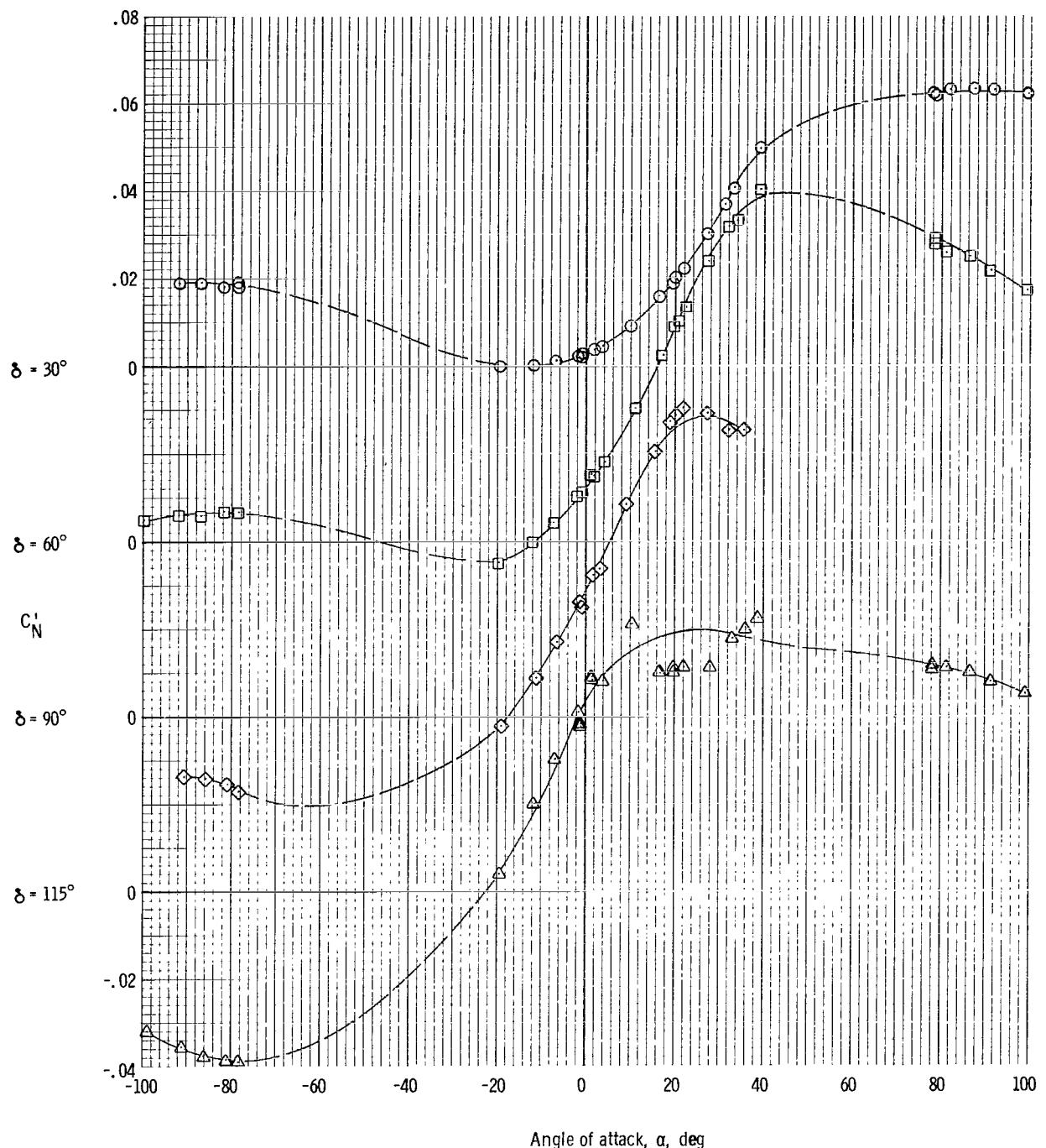
(c) Axial-force coefficient.

Figure 16. - Concluded.



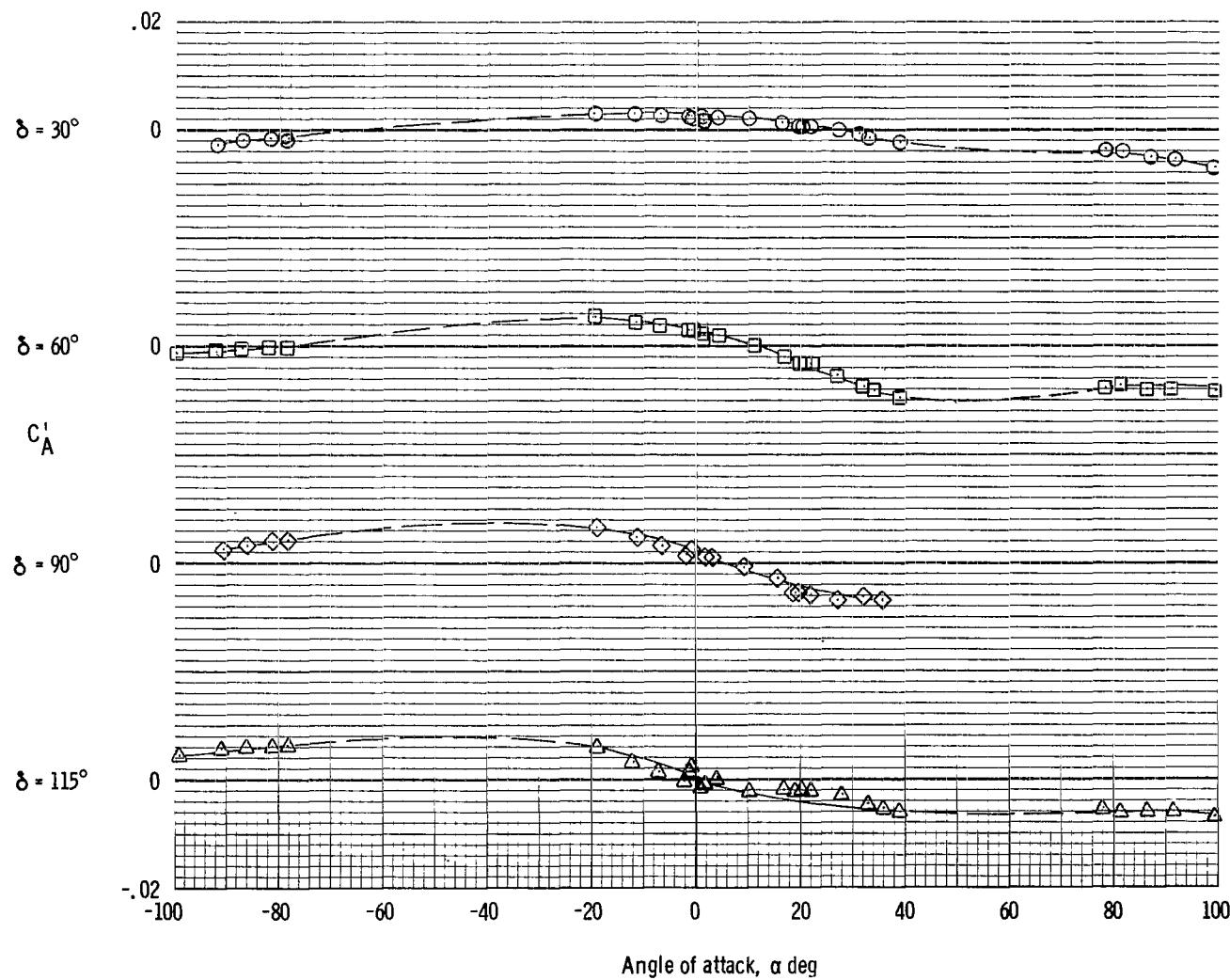
(a) Pitching-force coefficient.

Figure 17. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the canard axes, at deployment angles of 30° , 60° , 90° , and 115° at $M = 0.70$.



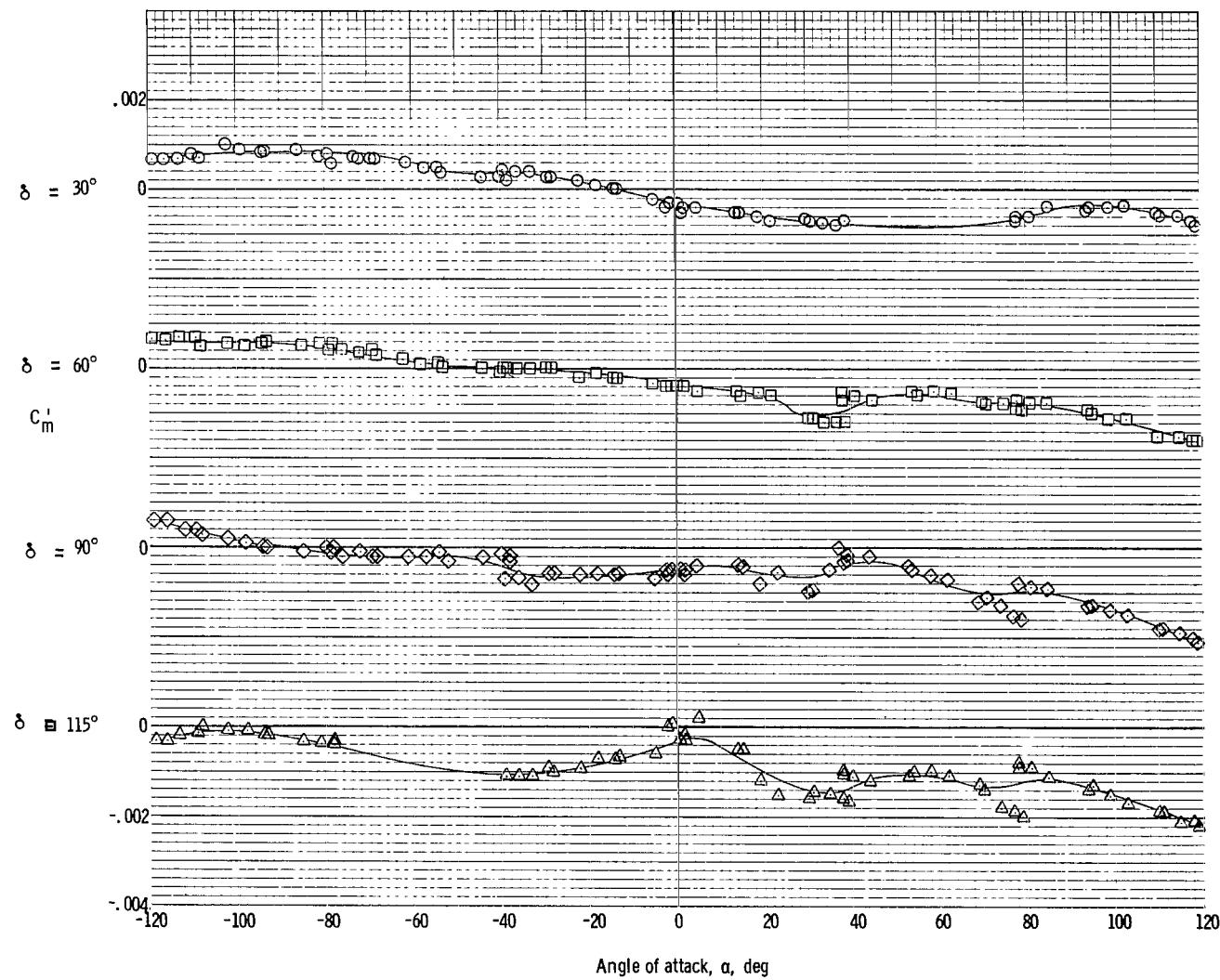
(b) Normal-force coefficient.

Figure 17. - Continued.



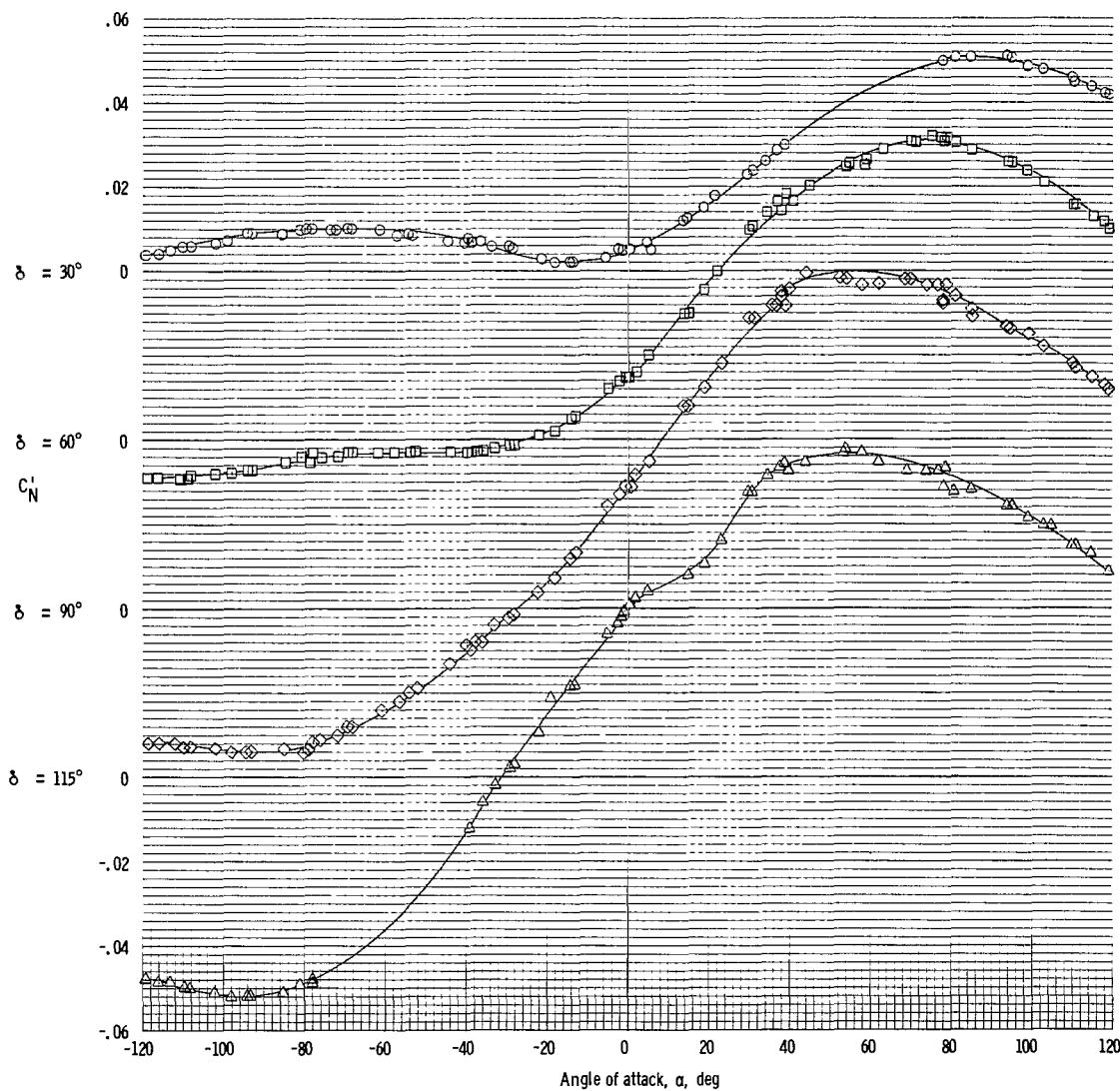
(c) Axial-force coefficient.

Figure 17. - Concluded.



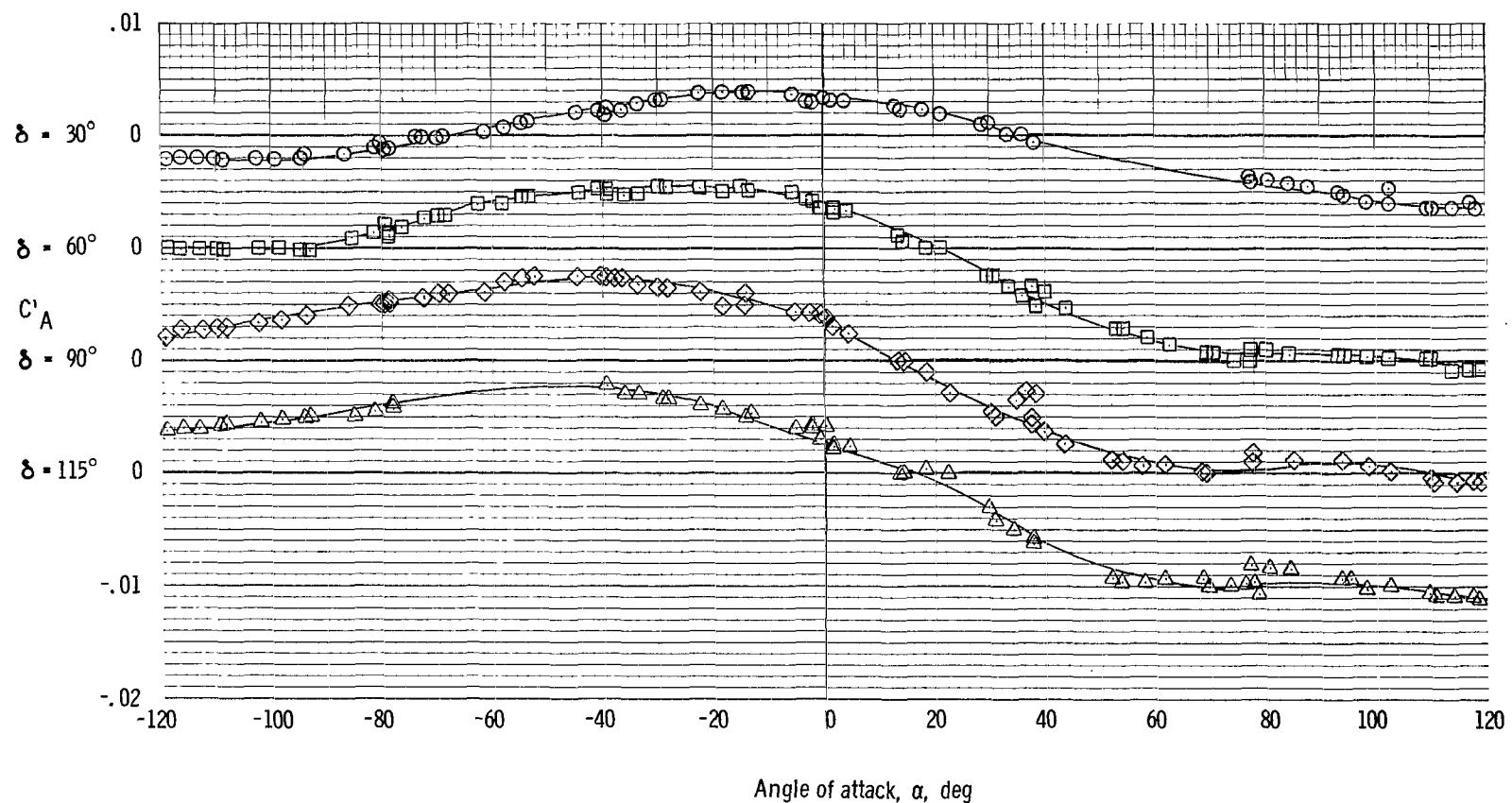
(a) Pitching-moment coefficient.

Figure 18. - Selected aerodynamic characteristics of the loads test model measured for a single canard about the canard axes, at deployment angles of 30° , 60° , 90° , and 115° at $M = 2.0$.



(b) Normal-force coefficient.

Figure 18. - Continued.



(c) Axial-force coefficient.

Figure 18. - Concluded.

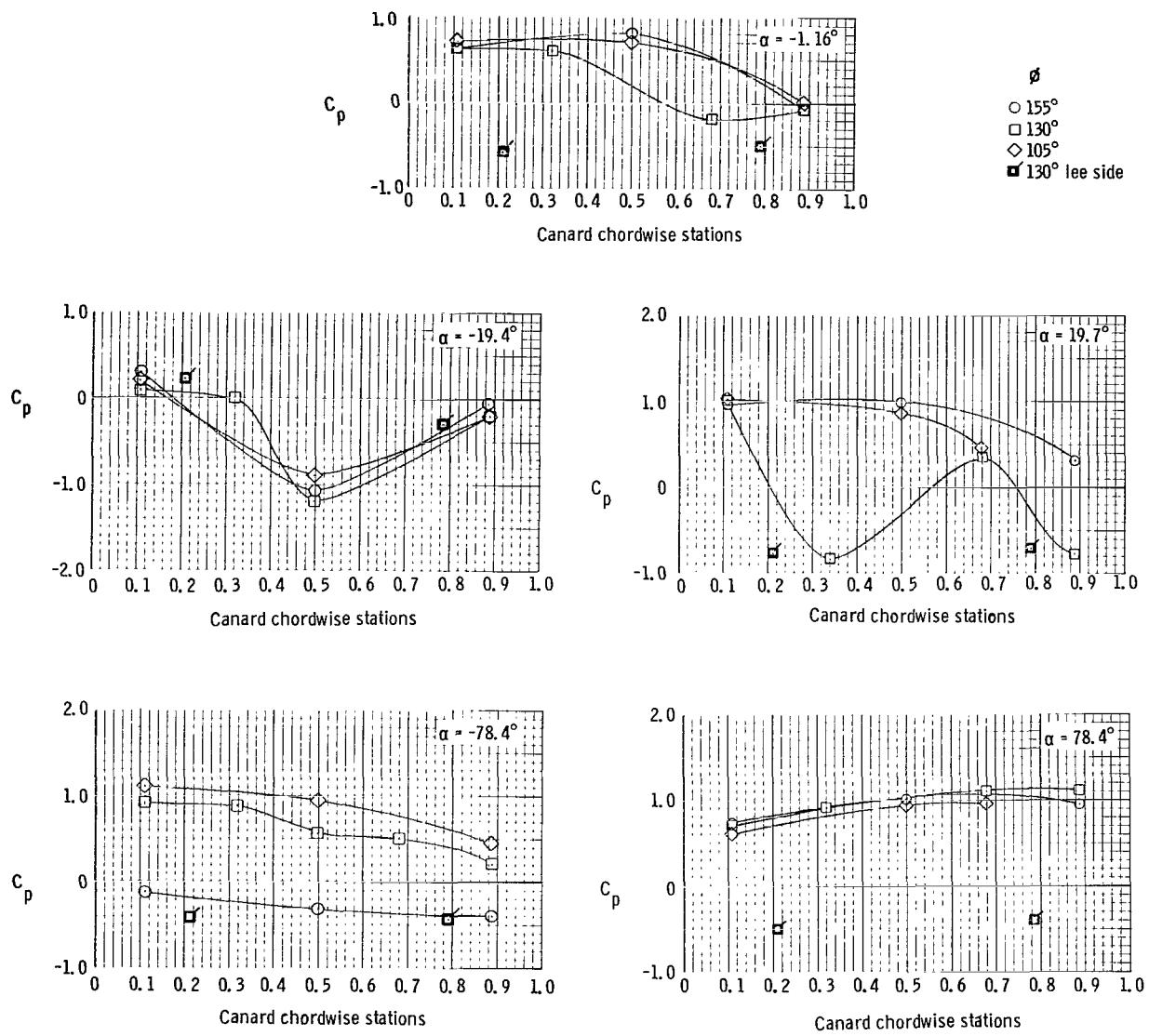


Figure 19. - Canard pressure coefficients computed for selected angles of attack, canard deployment angle of 115° , and $M = 0.70$.

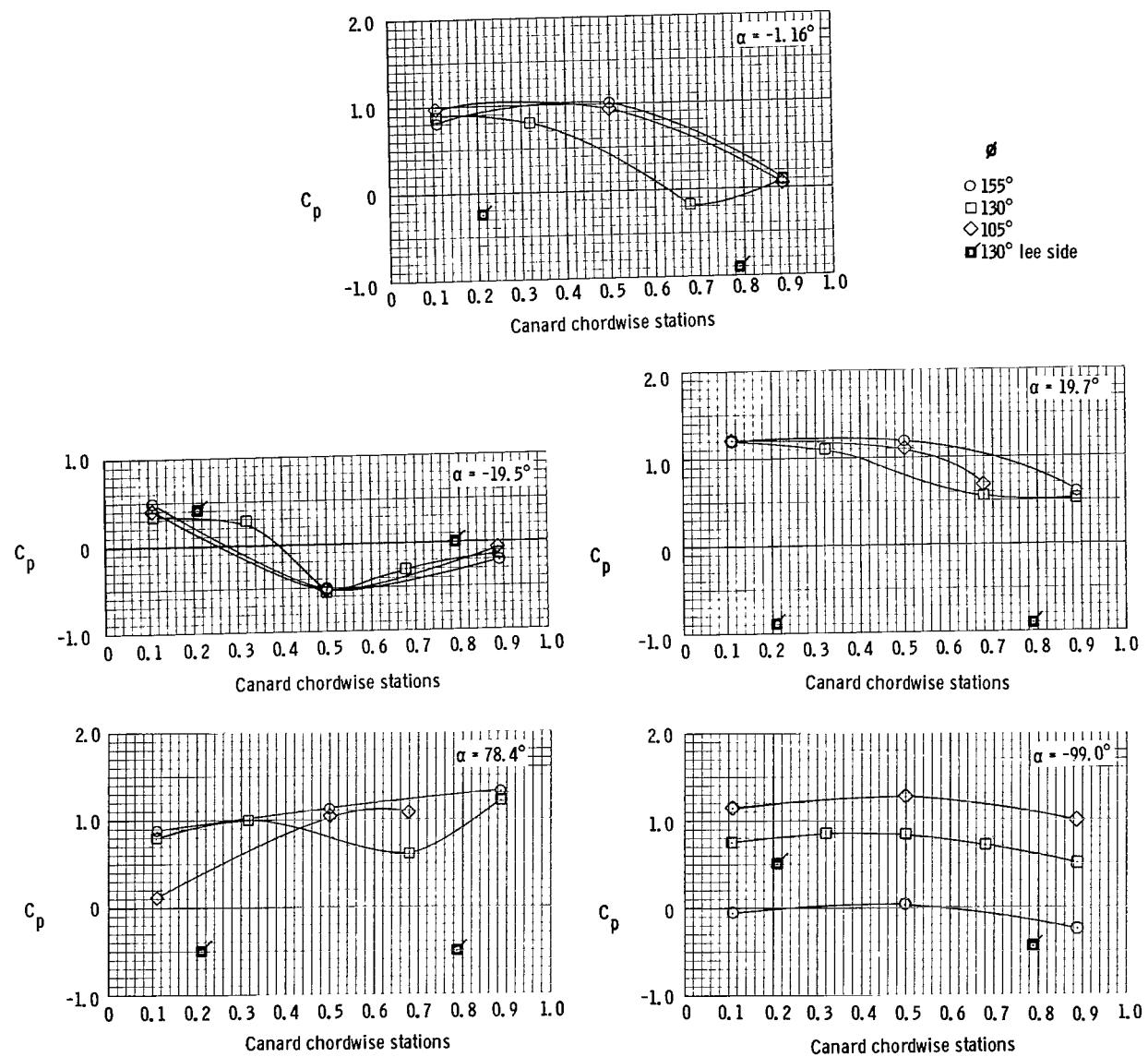


Figure 20. - Canard pressure coefficients computed for selected angles of attack, canard deployment angle of 115° , and $M = 1.1$.

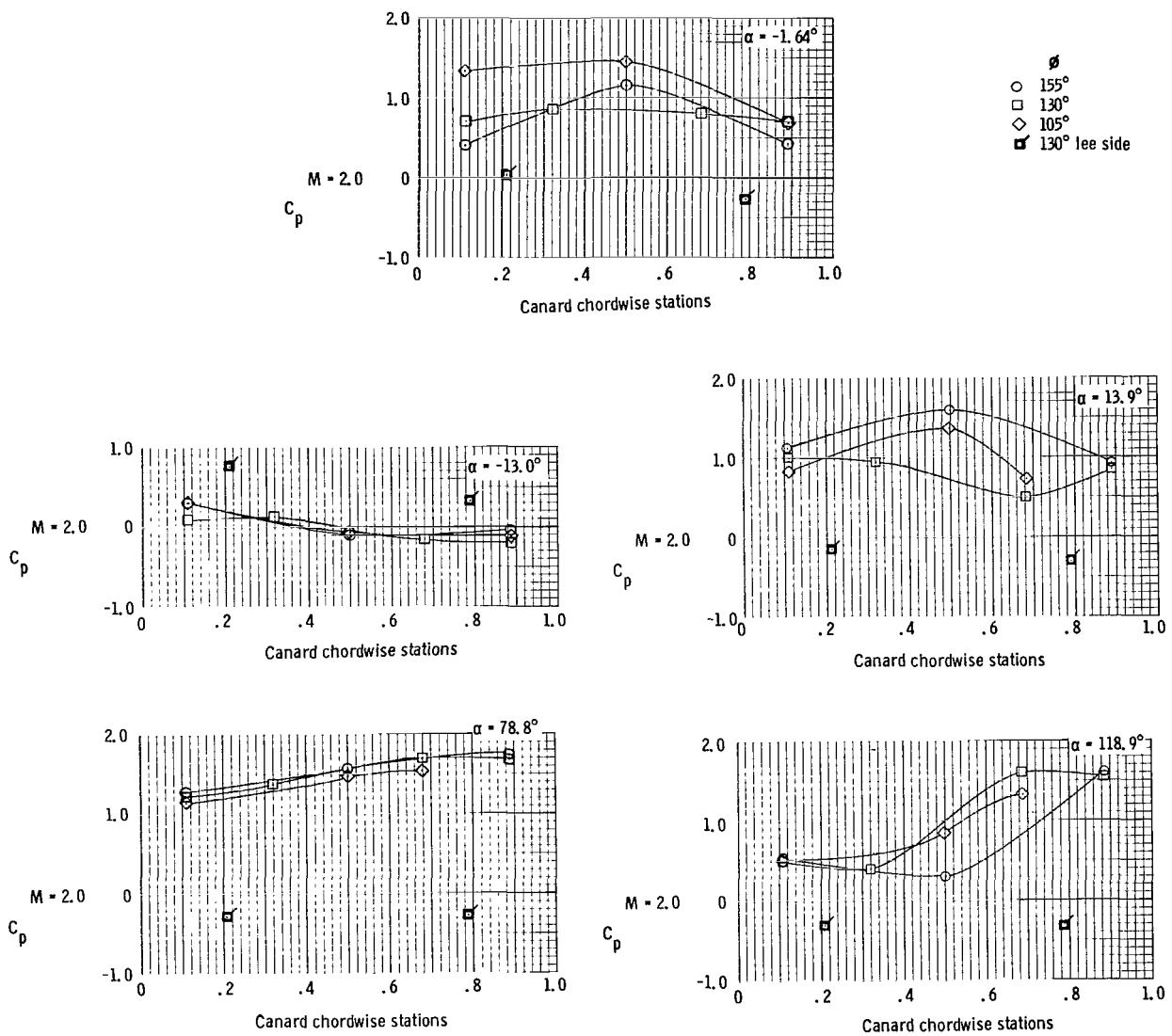


Figure 21. - Canard pressure coefficients computed for selected angles of attack, canard deployment angle of 115° , and $M = 2.0$.

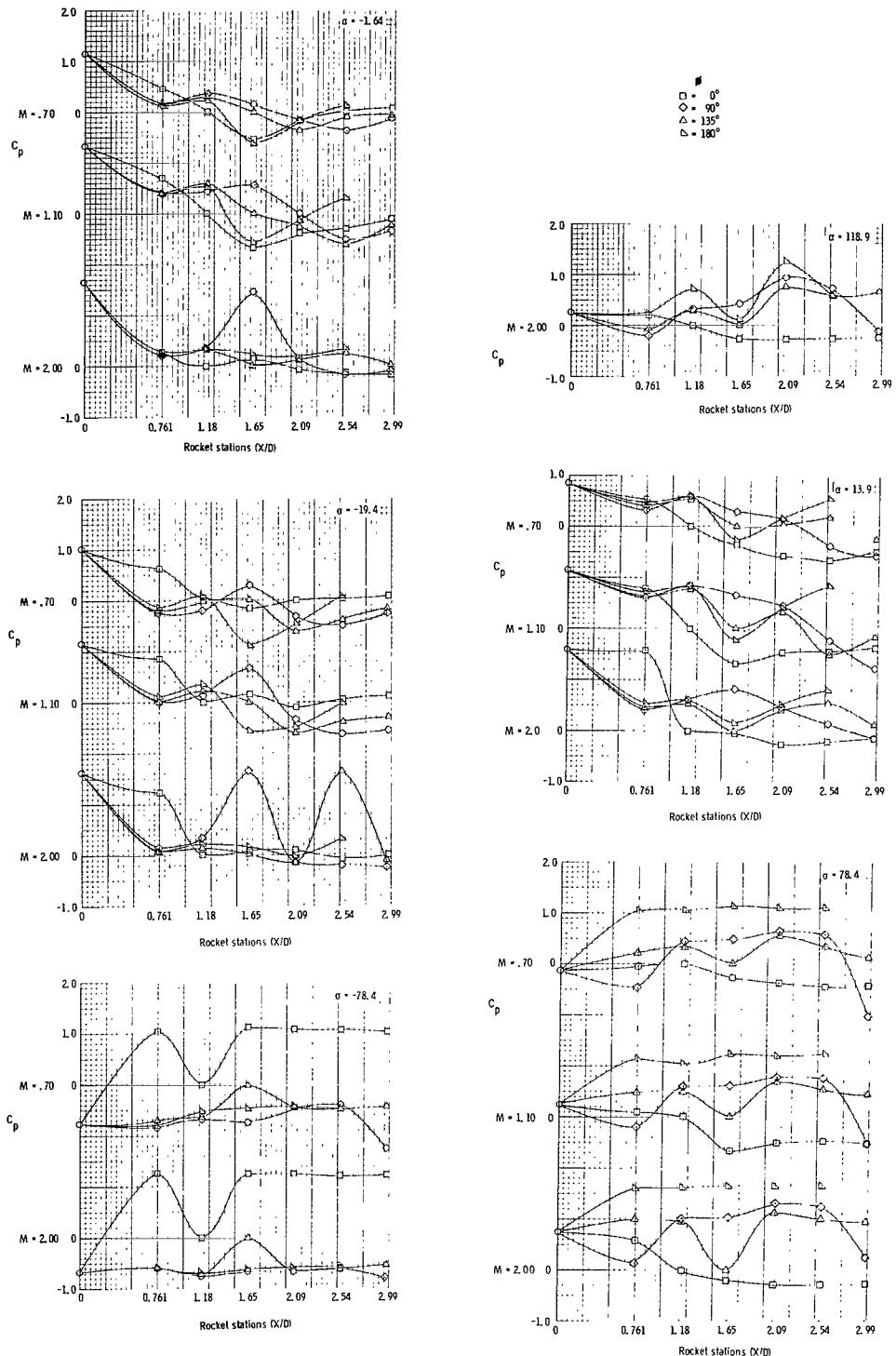


Figure 22. - Nose section pressure coefficients computed for selected angles of attack, canard deployment angle of 115° , and selected Mach numbers.

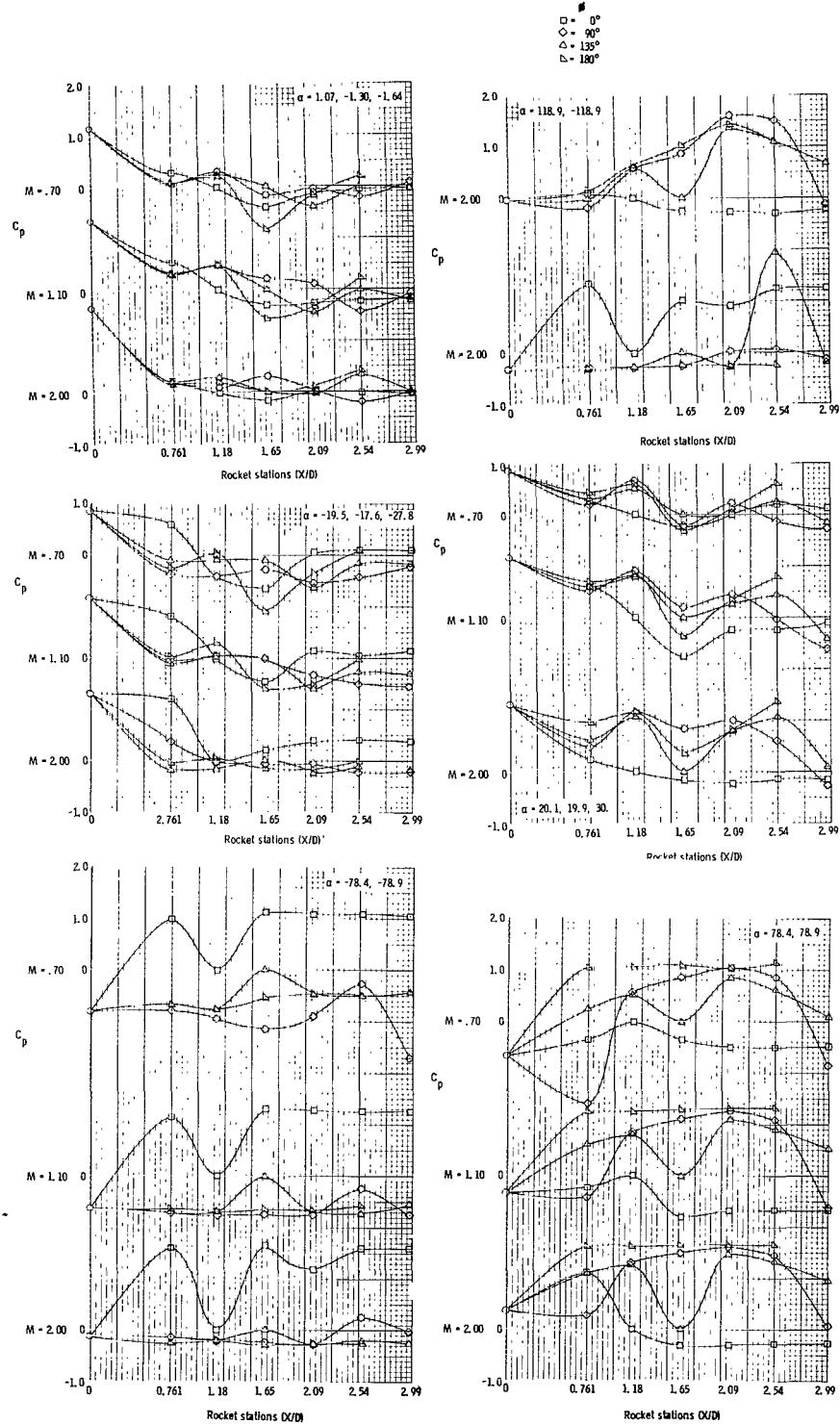


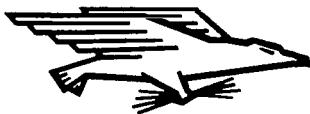
Figure 22. - Concluded.

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